

Audit Report

The Combined DNA Index System

September 2001

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THE COMBINED DNA INDEX SYSTEM

EXECUTIVE SUMMARY

The use of DNA profiles in solving crimes has become an increasingly powerful tool for law enforcement agencies. To further the use of DNA in solving crime, the Federal Bureau of Investigation (FBI) created a system of DNA profile indexes, the Combined DNA Index System (CODIS). This system, officially activated in October 1998, allows participating forensic laboratories to compare DNA profiles with the goal of matching case evidence to other previously unrelated cases or to persons already convicted of specific crimes. According to the FBI's statistics, as of February 2001, CODIS was instrumental in providing leads in 1,733 investigations nationwide.

CODIS consists of a hierarchy of DNA indexes at the local, state, and national levels. Local index laboratories upload DNA profiles to the state indexes, and state index laboratories upload DNA profiles to the national index, which is maintained by the FBI. The laboratories at each level of the hierarchy decide which profiles will be uploaded to the next level. When the FBI officially activated the national index, eight states contributed profiles as part of the test use of the index. According to the FBI, as of February 2001, 36 state index laboratories uploaded DNA profiles to the national index — one laboratory in each of 34 states, the FBI laboratory in Washington, D.C., and the U.S. Army laboratory in Forest Park, Georgia. In addition, 62 local index laboratories uploaded DNA profiles to the state index laboratories in these 34 states. Finally, as of March 2001, 26 laboratories in 12 foreign countries used the FBI-developed software that supports the CODIS databases. Each foreign country using the software maintains its own independent DNA indexes, with no cross-access between the foreign CODIS systems and the FBI's CODIS system.

The forensic laboratories that participate in CODIS perform DNA tests on samples from crime scene evidence (forensic profiles) and on samples from offenders convicted of specific crimes (convicted offender profiles). According to the FBI, as of February 2001 the national index contained 23,301 forensic profiles and 492,227 convicted offender profiles. State law determines the offenses for which a convicted offender is required to submit a DNA sample for testing. There is a wide variation in the types and numbers of crimes for which state statutes require convicted offenders to submit DNA samples. For example, Virginia requires any individual convicted of a felony to provide a sample for DNA analysis while Kentucky only requires individuals convicted of sexual offenses to provide DNA samples. In addition, as of February 2001, 26 of the 50 states with convicted offender legislation required juveniles convicted of specific crimes to submit a DNA sample for inclusion in the convicted offender index.

The FBI provides CODIS-participating forensic laboratories with software, training, and technical support free-of-charge. The CODIS software organizes and manages the DNA profiles and related information. It is important to note that none of the CODIS indexes contain any personal identifying information related to the DNA profiles. For each profile, the indexes identify the sample number and laboratory that performed the DNA analysis. The laboratory that contributed a DNA profile to CODIS must consult its own records to determine where or with whom a specific DNA sample originated. Each time a laboratory uploads DNA profiles to the next level in the hierarchy, the software automatically compares the two groups of profiles and notifies the appropriate laboratories if there is a potential match between two or more profiles. The laboratories must then perform additional work to determine whether or not the profiles actually match.

Examples of crimes solved through the use of DNA profiles and CODIS can be found in newspaper articles nationwide. In addition, DNA evidence has also been used to release innocent people from prison. According to the Innocence Project at the Cardozo Law School, as of April 26, 2001, DNA evidence was instrumental in freeing 87 innocent people from prison nationwide, including 10 people on death row. Because DNA is such a powerful tool, concern has been raised about the potential for misuse of the information in CODIS. For example, the American Civil Liberties Union fears that the information in the indexes will be used for purposes other than law enforcement. A second concern is that the indexes will include the DNA profiles of innocent individuals, violating their right to privacy. Additionally, the integrity of the data contained in CODIS is extremely important since the DNA matches provided by CODIS are frequently a key piece of evidence linking a suspect to a crime.

The legislation authorizing CODIS, the DNA Identification Act of 1994 (Act), included a requirement that the FBI establish quality assurance standards to ensure the integrity of the DNA records entered into the system. The Act also placed strict limitations on the data that could be entered into CODIS and how that information could be used. In addition, the Act appropriated \$40 million over a 5-year period for a grant program, administered by the Office of Justice Programs, National Institute of Justice (NIJ), to increase the capability and capacity of state and local forensic laboratories to perform DNA testing.

Prior to our audit, CODIS-participating laboratories were required to undergo annual audits to determine if they were in compliance with the FBI's quality assurance standards. Biennially, the audits were to be performed by an outside agency. The auditors were either DNA analysts from another laboratory or auditors representing an accreditation or certification agency. However, none of these audits included a review of the DNA profiles in CODIS to ensure they were complete, accurate, and allowable. In fact, no such audits of the DNA profiles in CODIS were being conducted at any level. Further, the FBI was not

informed of the laboratories' audit results, but instead the laboratories contributing DNA profiles to the national index simply certified that they had been audited and that they were in compliance with the legislation and quality assurance standards.

Due to significant law enforcement use of DNA, as well as the heightened risk that the FBI would not detect instances of noncompliance by the laboratories, we completed an audit of CODIS to: (1) evaluate the extent to which the FBI implemented and monitored the program, and (2) determine the extent of state and local participation in CODIS, particularly among those entities receiving Department of Justice grants for laboratory improvement. Our audit work included reviewing documentation at the FBI headquarters and the NIJ, and conducting audits at eight CODIS-participating laboratories.¹ At each laboratory we reviewed policies and procedures to determine if the laboratory was in compliance with the FBI's quality assurance standards and national index requirements. We also reviewed a judgmental sample of the forensic and convicted offender profiles each laboratory had contributed to CODIS to determine if the profiles were complete, accurate, and allowable. At the time of our audits, the eight laboratories had contributed approximately 24 percent of the forensic profiles and 71 percent of the convicted offender profiles contained in the national index.

Summary of Findings

Our audit disclosed that the FBI has made significant progress in implementing the CODIS program nationwide. As of March 2001, 129 laboratories in the United States used the CODIS software. Additionally, only one state was not either participating in the national index or completing the application process necessary to participate in the national index. It is clear that CODIS is an effective law enforcement tool since there are numerous examples of crimes solved using DNA profiles and CODIS. However, we found that:

- The FBI needs to improve its oversight of CODIS-participating laboratories to ensure the laboratories are in compliance with the Act, the FBI's quality assurance standards, and the FBI requirements for laboratories participating in the national index. Our audits of eight state and local laboratories disclosed that four laboratories did not fully comply with the FBI's quality assurance standards and national index requirements. These laboratories agreed to initiate corrective action to resolve the findings from our audits. Also, although the CODIS-participating laboratories undergo annual audits to determine if they are compliant with the FBI's quality assurance standards, we noted that the FBI did not have a process in place to ensure that laboratories instituted appropriate corrective action for audit findings. FBI

¹ We audited state laboratories in Berkeley, CA; Tallahassee, FL; Springfield, IL; Raleigh, NC; Greensburg, PA; and Richmond, VA; and local laboratories in Fort Lauderdale and Miami, FL.

personnel stated that they were aware of the need for a process to resolve audit findings and that they were working to develop such a process.

- The FBI needs to initiate procedures to ensure that DNA profiles in CODIS are complete, accurate, and allowable. At six of the eight laboratories audited, we found 49 unallowable or incomplete forensic profiles in CODIS out of the 608 forensic profiles reviewed. The unallowable profiles were from a known person other than the suspected perpetrator, such as a victim, an entry that is strictly prohibited from inclusion in CODIS. Further, at two of the eight laboratories we identified 6 incomplete or unallowable convicted offender profiles in CODIS out of the 700 convicted offender profiles we reviewed. We found that the unallowable profiles in CODIS were uploaded inadvertently or because a laboratory did not fully understand the rules governing acceptable profiles. Generally, the laboratories either removed the unallowable profiles from CODIS or corrected incomplete profiles when we notified them of the problem.
- Although the FBI tracks the number of profiles in the national index by laboratory on a monthly basis, neither the FBI nor the Florida state index administrator recognized that 110 DNA profiles from the Miami-Dade Police Department had been deleted from both the state and national indexes. Due to software problems, the profiles were inadvertently deleted from the two indexes in September 1998. We brought this condition to the FBI's attention and the profiles were uploaded to the state and national indexes after the software problem was corrected.
- The NIJ did not ensure that laboratory grants awarded through Congressional earmarks met the requirements of the Act. Of the seven grants reviewed, one grantee received two grants totaling \$1,377,846 that did not call for the grantee to provide matching funds as required by the Act.

The audit results, which include information previously identified in individual laboratory reports, are discussed in greater detail in the Findings and Recommendations section of this report. Our audit objectives, scope and methodology, and a list of laboratories previously audited appear in Appendix I.

TABLE OF CONTENTS

INTRODUCTION.....	1
CODIS Program	2
Federal DNA Grant Funds	6
FINDINGS AND RECOMMENDATIONS.....	7
1. Implementation and Impact of CODIS	7
Performance Measures for CODIS	7
Implementation of CODIS	10
Impact of CODIS	13
2. The FBI Needs to Strengthen its Oversight of CODIS	15
Laboratory Application Process.....	15
Compliance with the QAS and NDIS Requirements.....	16
Records Contained in CODIS	22
Conclusion.....	29
Recommendations.....	30
3. The NIJ’s Oversight of DNA Grant Funding.....	31
Recommendation	32
OTHER REPORTABLE MATTERS	33
STATEMENT ON MANAGEMENT CONTROLS	35
STATEMENT ON COMPLIANCE WITH LAWS AND REGULATIONS.....	36
DNA Identification Act of 1994	36
Privacy Act of 1974.....	37
Coverdell Amendment	37
APPENDIX I – OBJECTIVES, SCOPE, AND METHODOLOGY.....	38
APPENDIX II – GLOSSARY OF TERMS AND ACRONYMS	41
APPENDIX III – AUDIT CRITERIA	44
Quality Assurance Standards	44
NDIS Requirements	46
State Legislation	49

APPENDIX IV – FACTORS AFFECTING FORENSIC DNA TESTING LABORATORIES	51
DNA Technology	51
Resource Issues	52
State Legislation	53
Role of Sample Collection Agencies.....	53
APPENDIX V – SCHEDULE OF DOLLAR-RELATED FINDINGS.....	55
APPENDIX VI – AUDITEE COMMENTS ON DRAFT REPORT	56
APPENDIX VII – AUDIT DIVISION ANALYSIS AND SUMMARY OF ACTIONS NECESSARY TO CLOSE REPORT	62

INTRODUCTION

A core function of the Department of Justice is solving crime, which includes aiding state and local law enforcement agencies to do the same. On an increasing basis, the use of DNA profiles (a computerized record containing DNA characteristics used for identification) has aided their effort. Accordingly, the Department initiated grant programs to strengthen DNA capabilities in state and local laboratories and, on March 18, 1998, the Attorney General asked a commission to address key DNA issues.

To further the use of DNA in solving crime, the Federal Bureau of Investigation (FBI) created a hierarchy of DNA profile indexes, the Combined DNA Index System (CODIS). CODIS is a national DNA information repository maintained by the FBI that allows state and local crime laboratories to store and compare DNA profiles from crime-scene evidence and convicted offenders. The goal of the system is to match case evidence to other previously unrelated cases or to persons already convicted of other crimes. Newspapers across the country have printed stories concerning crimes that were solved using DNA analysis and CODIS. The use of DNA profiles in solving crimes has become an increasingly powerful tool for law enforcement agencies, as shown in the following examples.

- In May 2000, CODIS was instrumental in solving the 1977 murder of a 6-year old girl in Reno, Nevada. Beginning in 1977, various forensic tests were performed on the child's clothing, which was found in a dumpster a few miles from Reno, but the case remained unsolved. In 1994, the perpetrator's DNA profile was developed from the clothing. The DNA profiles of numerous suspects were compared to the perpetrator's profile but no matches resulted. In May of 2000, a second DNA profile from the clothing was developed, using newer technology. When the second DNA profile was entered into CODIS, it matched with the DNA profile of a 57-year old convicted sex offender. The offender lived in the area and had been on parole since his release from prison in 1976. The suspect pled guilty to kidnapping and murder in October 2000 and was sentenced the following month.
- In June 1999, CODIS linked three unsolved sexual assault cases in Florida to six unsolved sexual assault cases in Washington, D.C. DNA evidence was crucial in the Florida cases because none of the victims were able to describe the offender and no other physical evidence was left at the crime scenes. In early July 1999, the perpetrator of the nine assaults, who was deceased, was identified through DNA analysis.

The criminal justice system has also relied on DNA evidence to prove the innocence of individuals wrongly convicted of crimes. According to the Innocence Project at the Cardozo Law School, as of April 26, 2001, DNA evidence was instrumental in freeing 87 innocent people from prison nationwide, including 10 people on death row. CODIS might have prevented the incarceration of these innocent people by helping to identify the perpetrators of the crimes for which they were convicted or by excluding them as suspects in those crimes.

The fact that DNA profiles are such a powerful tool for the criminal justice system emphasizes the potential for misuse of the information in CODIS. There are fears that, without strict controls over CODIS, information in the databases might be used for purposes other than law enforcement. During testimony before the National Commission on the Future of DNA Evidence (Commission), the Associate Director of the American Civil Liberties Union expressed concerns about the misuse of DNA databases. He testified that government databases inevitably undergo something he called “function creep.” He stated that function creep occurs when databases that are created for one discrete purpose eventually take on new functions and purposes despite the initial promises of their creators.

The legislation authorizing CODIS, the DNA Identification Act of 1994 (Act), required the FBI to develop quality assurance standards that would ensure the integrity of the DNA records entered into the system. The Act placed strict limitations on the data allowed in CODIS and the use of that data. Prior to our audit, CODIS laboratories were not audited to determine whether the profiles in CODIS were complete, accurate, and allowable. Although CODIS-participating laboratories were audited to determine if they were compliant with the quality assurance standards, there was no system in place to ensure that laboratories adequately resolved audit findings. Furthermore, the FBI was not informed of the laboratories’ audit results. Rather, the laboratories contributing DNA profiles to the national index simply certified that they had been audited and that they were in compliance with the legislation and quality assurance standards.

CODIS Program

State and local crime laboratories that participate in CODIS perform DNA analysis on specimens from crime-scene evidence and convicted offenders. The FBI provides participating laboratories with special software, free-of-charge, that organizes and manages the DNA profiles and related information. The software also enables participating laboratories to compare DNA profiles and notifies the appropriate laboratories when two or more DNA profiles match. The Forensic Science Systems Unit,

part of the FBI's Laboratory Division, was directly involved in the development of all aspects of CODIS and continues to oversee the program.

According to the FBI, it began using Scientific Applications International Corporation (SAIC) in 1995 to develop CODIS software, software upgrades, provide training and technical assistance to software users, and to physically maintain and secure the national index of DNA profiles. The national index is maintained on government-owned equipment at the contractor's facility. The FBI owns all rights to the CODIS software. For fiscal years 1990 through 2000, SAIC received a total of \$42.3 million for its work on CODIS. The FBI's contract with SAIC is broken up into many subtask orders, each of which covers a segment of the software development and maintenance. One of three methods is used to determine SAIC's compensation under a specific task order: cost plus award fee, cost plus fixed fee, or fixed fee.

Two separate CODIS databases were reviewed for this audit. The forensic database contains DNA profiles obtained from crime-scene evidence for persons whose identity is not known with certainty. The convicted offender database consists of DNA profiles from persons convicted of crimes in state or local courts, where the applicable state legislation permits the creation of a DNA record for convicted persons. There is a wide variation among states regarding which criminal statutes require convicted offenders to provide a DNA sample, as shown in the following table.

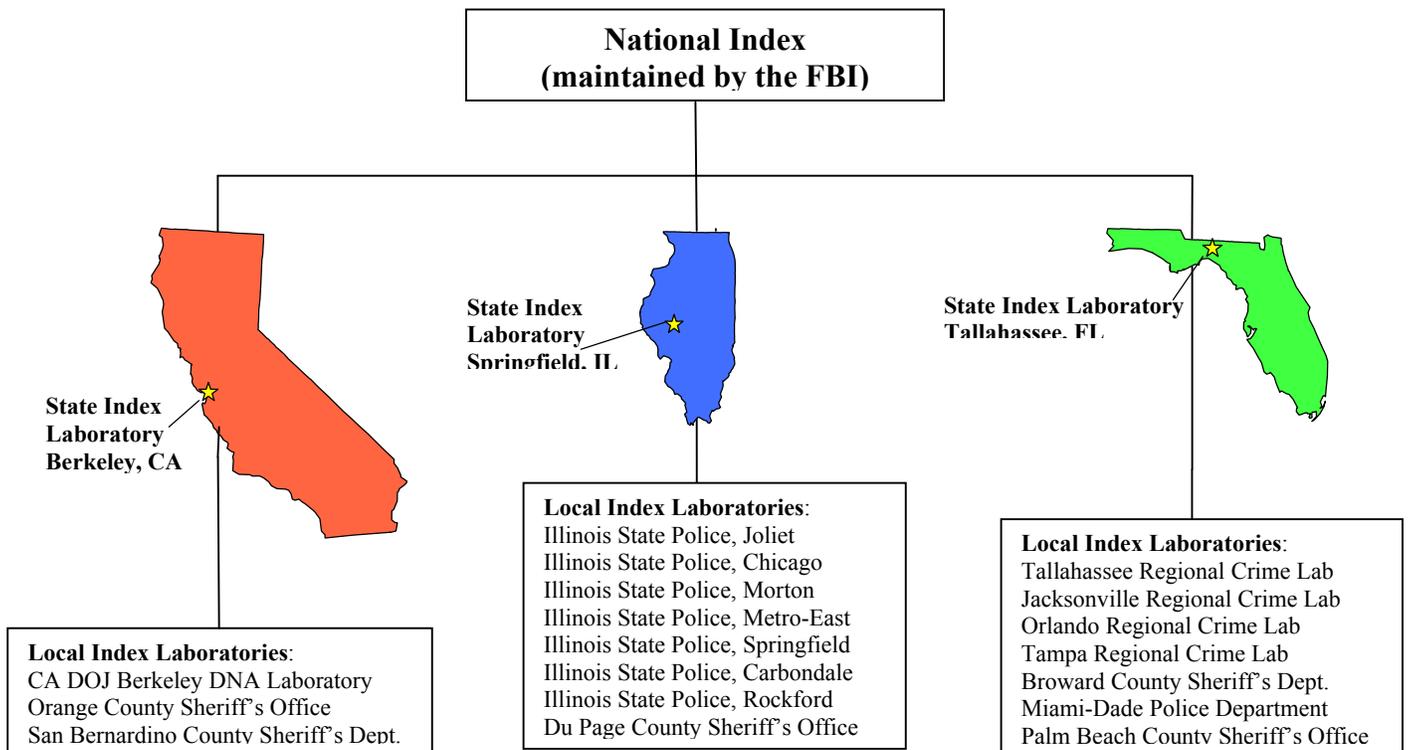
Type of Offense	Number of States Requiring a DNA Sample from Convicted Offenders
Sex Offenses	50
Offenses Against Children	42
Murder	44
Assault and Battery	34
Kidnapping	38
Robbery	26
Burglary	25
All Felonies	7
Attempted Crimes (rape, murder, etc.)	34
Juvenile Offenders (qualifying crimes)	26

Source: Summary of State DNA Database Laws prepared for the FBI, March 2001

In addition, 35 states require that individuals convicted of a qualifying crime in the past, and incarcerated on the date the law became effective, submit a DNA sample for inclusion in CODIS. Further, nine states made the law retroactive for convicted offenders on parole when the law became effective and ten states made the law retroactive for convicted offenders on probation at the time the law became effective.

The FBI organized CODIS as a hierarchy that includes national, state, and local indexes known as the National DNA Index System or NDIS (national index), the State DNA Index System or SDIS (state index), and the Local DNA Index System or LDIS (local index). DNA profiles are uploaded into the national index from the state indexes and into the state indexes from the local indexes. The forensic laboratories at each level of the CODIS hierarchy decide which DNA profiles will be uploaded to the next level. The FBI maintains the national index, and each state participating in CODIS is required to select one crime laboratory to maintain its state index. The laboratory in each state that maintains the state index also maintains its own local index. None of the CODIS indexes contain any personal identifying information related to the DNA profiles. For each profile, the indexes identify the sample number and laboratory that performed the DNA analysis. The laboratory that contributed a DNA profile to CODIS must consult its own records to determine where or with whom a specific DNA sample originated. The following chart illustrates the CODIS hierarchy.

Example of System Hierarchy within CODIS



As of February 2001, there were 36 state index laboratories² in 34 states uploading DNA profiles to the national index. There were 62 local index laboratories uploading DNA profiles to state index laboratories. The fact that a state laboratory uploads profiles to the national index does not mean that all local laboratories in the state upload DNA profiles to the state index. Some local crime laboratories do not perform DNA testing, and those that do may either choose not to participate in the state index or may be working to meet the requirements necessary to participate in the state index.

The FBI incorporated two important safeguards into CODIS: (1) participating laboratories can only upload DNA profiles to the next level of the hierarchy since the system is not set up to allow a laboratory to download DNA profiles from another laboratory; and (2) participating laboratories can only access their own indexes. As a result, each laboratory can only make changes to its own index and a laboratory cannot query another laboratory's local index, the state indexes, or the national index. When a laboratory uploads profiles to the next level, the uploaded profiles are automatically compared to the profiles contained in the index at that level. When there is a possible match between two or more profiles, the laboratories that submitted the specific profiles are notified. The notification indicates the specimen numbers and laboratories involved in the potential match. It is then the responsibility of the laboratories to contact each other and run confirmatory tests to determine whether or not the DNA profiles actually match.

The FBI's contractor tested the CODIS software as it was developed. Next, the software was provided to approximately 14 state and local laboratories for preliminary testing as part of a CODIS pilot program. In December 1997, eight state laboratories began submitting DNA profiles as part of an acceptance test of the national index. In addition, the Department of Commerce's National Institute of Standards and Technology (NIST) and the University of Illinois at Chicago jointly conducted a study on the feasibility of blind proficiency testing that tested the CODIS software matching capabilities. One of the test subjects was the FBI laboratory which received case evidence from two states over a period of months in 1997 that, unbeknownst to the laboratory, were created by NIST for testing purposes. In addition, the FBI was given the same samples as another test subject to determine if the CODIS system would correctly identify an interstate CODIS hit. According to documentation provided to the FBI laboratory about the test, it obtained the correct results and the CODIS software correctly identified the match.

² The two remaining state index laboratories are the FBI laboratory in Washington, D.C., and the U.S. Army laboratory in Georgia. These laboratories do not receive profile uploads from local index laboratories. The FBI laboratory contributes forensic profiles developed from crime-scene evidence submitted by state or local law enforcement agencies for DNA analysis, from evidence in federal crimes, and from crimes committed in the District of Columbia or on government land. The U.S. Army laboratory contributes forensic profiles for crimes that fall under the military's jurisdiction.

Federal DNA Grant Funds

The DNA Identification Act of 1994 authorized \$40 million over a 5-year period for a grant program that would provide funds to states and units of local government for programs intended to develop or improve a forensic laboratory's capability to analyze DNA. The Office of Justice Programs, National Institute of Justice (NIJ), administered the Laboratory Improvement Program (LIP), a competitive grant program in which laboratories vied for grant funds through the grant proposal process. Grant applicants were required to certify that: (1) DNA analysis performed at their laboratory meets or exceeds the quality assurance standards issued by the Director of the FBI, (2) the laboratory and each analyst performing DNA analysis undergo external proficiency testing every 180 days, and (3) DNA samples and analysis results are disclosed only in accordance with the Act.

The Antiterrorism and Effective Death Penalty Act of 1996 authorized \$468 million for the State Identification System (SIS) grant program. The purpose of this 4-year grant program was to expand states' compatibility and integration with one or more of three identification systems maintained by the FBI: (1) the Integrated Automated Fingerprint Identification System, (2) the National Crime Information Center system, (3) and CODIS. Unlike the LIP program, eligibility for the SIS grants was determined solely by whether the states' DNA legislation mandated the collection of DNA samples from each person convicted of a felony of a sexual nature. The SIS program, administered by the Bureau of Justice Assistance (BJA), was a formula grant program in which all states that met the eligibility requirement received an equal portion of the available grant funds each year.

The Byrne Formula and the Local Law Enforcement block grant programs, overseen by the BJA, also provided funding for DNA-related projects. However, these grant programs were not limited to DNA-related projects. Grantees were allowed to use the funds for any number of approved purposes. The funds for these two block grant programs and the SIS grant program were awarded to an administrative agency in each state that was responsible for overseeing the use of the funds.

FINDINGS AND RECOMMENDATIONS

1. IMPLEMENTATION AND IMPACT OF CODIS

The FBI has made significant progress in implementing CODIS across the country. Thirty-four states are contributing DNA profiles to the national index and 15 states have initiated the application process necessary to participate at the national level. On the local level, 62 laboratories are contributing DNA profiles to the national index through their state laboratories. The fact that the system works and is useful to the criminal justice system can be partially demonstrated by FBI statistics which reported that 1,733 investigations were aided by the use of CODIS as of February 2001. However, the Commission has estimated that tens of thousands of evidence samples across the country are untested. The crime-solving potential of CODIS will be enhanced when a substantial number of these untested forensic profiles are added, especially profiles from cases without a suspect. In addition, 24 percent of the forensic profiles and 29 percent of the convicted offender profiles in the national index are considered incomplete because they do not contain the required number of loci (specific locations on the DNA molecule, analogous to an address for a house). The incomplete profiles are not used in searches at the national index. As a result, there is the possibility that DNA matches are not discovered and crimes remain unsolved. The lack of forensic profiles and complete DNA profiles in the national index are, to some degree, due to a resource shortage at state and local forensic laboratories.

The FBI's progress in implementing CODIS can be examined by reviewing the performance measures that the FBI has set for its own development of the CODIS system. The FBI's progress in implementing CODIS can also be measured in part by the number of laboratories uploading DNA profiles to CODIS and the number of DNA profiles in CODIS. The impact of CODIS is more difficult to demonstrate. There are numerous statistics concerning the number of crimes solved using DNA and the number of investigations aided by DNA evidence. However, the full value of CODIS to the criminal justice system and to the citizens of this country is difficult to measure.

Performance Measures for CODIS

In response to the Government Performance and Results Act, the FBI's strategic plan for CODIS included the desired program outcomes and results. The plan, developed in November 1994, stated that the outcomes were not limited to the CODIS software because the successful achievement of the program's goals and objectives depended on the work of several units of the FBI laboratory and the Department of Justice. Under the

section titled *Vision*, the strategic plan posed the question, “Where do we want CODIS to be in 5 years?” This question was answered with the following four statements.

- Biological evidence from all violent crimes, including crimes with no suspects, routinely captured, analyzed, and used in the judicial system.
- All states have DNA convicted offender legislation with CODIS compatibility clause.
- States expand convicted offender DNA databases to include all felons, including juveniles.
- Backlog problem under control; all jurisdictions have sufficient capacity to accommodate steady-state demand.

The strategic plan also delineated eight goals, nine targets, and eight objectives. The document defined goals as the results needed to fulfill the FBI’s vision for CODIS, targets as the broad activities needed in the next 5 years to reach the CODIS goals, and objectives as the specific things that needed to be accomplished within the next 24 months. We reviewed the FBI’s progress in accomplishing the activities noted in the following table.

ACTIVITY	CATEGORY
For software development, reach Level 2 of the Software Engineer Institute’s Capability Maturity Model (Model).	Objective
Expand CODIS installed base to 125 laboratories.	Objective
Begin full-scale operation of the national index, with all eligible laboratories participating.	Target
Proliferate the installed base to include all crime laboratories doing DNA analysis.	Target
Optimize software performance for local, state, and national indexes.	Target
Implement high-bandwidth Wide Area Network secure communications.	Target
Implement Unidentified Person Index.	Target

Although the FBI’s vision for CODIS was not realized within five years, we determined that the FBI has made steady progress toward that end. The FBI completed the two objectives that we tested, but not within the 24-month time frame established for the objectives. For processes involved in developing CODIS software, the contractor was operating at Model Level 2 in October of 1999. The Model has five levels, Level 5 being the highest, that indicate the relative maturity of the processes used to produce a product.

The Model is based on the concept that the quality of a product is a function of the processes used to create it. The more mature the process, the higher the quality. In addition, more mature processes yield more accurate cost and schedule estimates.

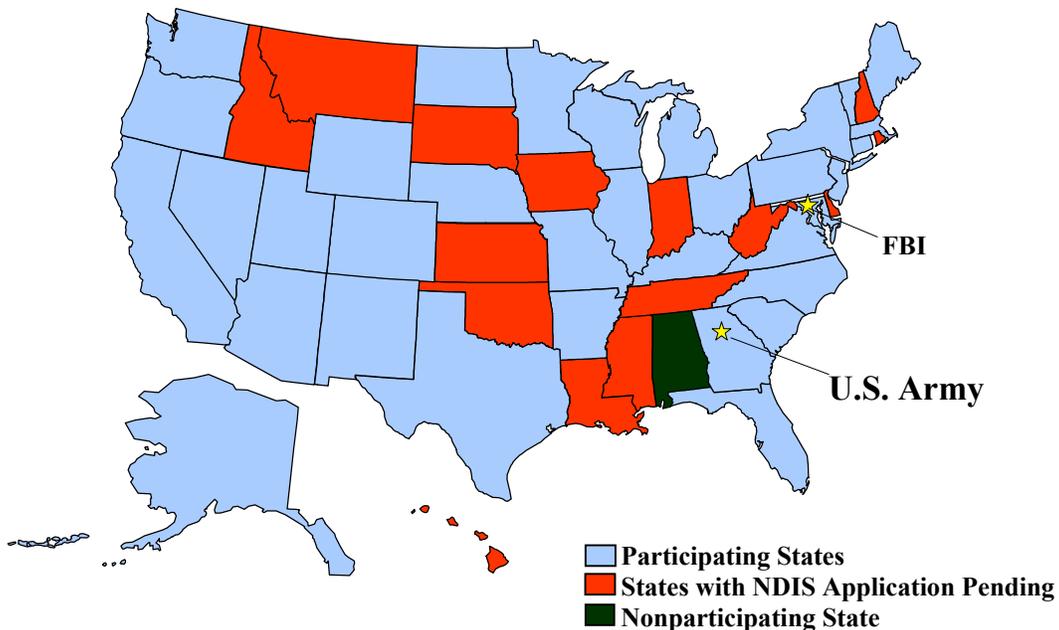
The FBI was not able to expand the installed base to 125 laboratories within the 24-month time frame set for the objective. Our testing revealed that as of March 2001, 129 laboratories in the United States were using CODIS software, although not all of these laboratories contribute DNA profiles to the state and national indexes. Originally, the FBI provided laboratories with the software upon request. Within the past two years, the FBI has not provided CODIS software to a laboratory until it was ready to begin uploading DNA profiles to the state and national indexes. This policy change slowed the rate at which new laboratories began using the software. In our judgment, the new policy is more effective because the FBI does not spend time installing the software until a laboratory is ready to fully participate in and contribute to CODIS.

As noted in the previous table, we tested five of the targets listed in the strategic plan. In October 1998, the FBI began the full-scale operation of the national index with all eligible laboratories (the test site laboratories and others that had completed the NDIS-participation application process), thereby meeting the first target. The states that served as test sites for the national index as well as the states currently participating in the national index are discussed in the next section of the report. The second target was to have 100 percent of the crime laboratories that performed DNA analysis using CODIS software. This target was not met for the reasons discussed in the previous paragraph. The third target was to optimize software performance for the local, state, and national indexes. This is an ongoing process in that it will probably always be possible to improve the software. According to officials at the eight laboratories we audited, the FBI was responsive to user complaints and suggestions as they developed each new version of CODIS software.

The FBI has completed a portion of the fourth target — to implement high-bandwidth wide area network secure communications among the laboratories participating in the national index. The FBI is in the process of connecting laboratories to its Criminal Justice Information System Wide Area Network. The FBI estimates that, if funds are available, the project will be completed by the end of 2001. Lastly, the FBI stated that as of January 31, 2001, laboratories could begin uploading DNA profiles to the Unidentified Human Remains and the Relatives of Missing Persons Indexes, meeting the fifth target. These new indexes allow laboratories to contribute and compare DNA profiles from unidentified human remains with the DNA profiles of close biological relatives of missing persons in order to identify the remains.

Implementation of CODIS

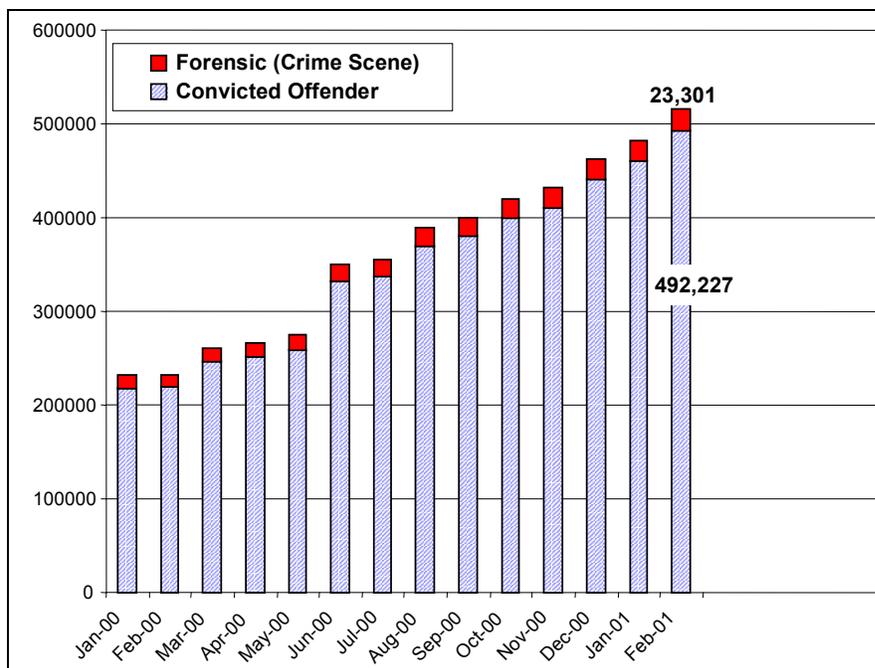
The FBI officially activated the national index in October 1998. At that time there were eight states contributing profiles as part of the test use of the index: California, Florida, Illinois, Minnesota, North Carolina, Oregon, Utah, and Virginia (our audits included five of these states). There are 53 laboratories eligible to serve as SDIS sites: one laboratory in each state and in Puerto Rico; the FBI laboratory in Washington, D.C.; and the U.S. Army laboratory in Georgia. According to the FBI, as of February 2001, 36 state index laboratories³ had completed the application process and another 15 laboratories had started the process. Puerto Rico and Alabama had not begun the application process. Puerto Rico informed the FBI that it would like to use the CODIS software and is gathering information about the application process. According to the FBI, Alabama was slowed by personnel changes and was not yet testing DNA samples at the 13 Short Tandem Repeat (STR) loci required for DNA profiles that are included in the national index. The FBI estimated that the Alabama state index laboratory will not be ready to participate in the national index until June 2002. The status of CODIS implementation by state is shown in the following chart.



Source: FBI NDIS Program Metrics, February 2001 report

³ 36 laboratories were comprised of state index laboratories in 34 states, the U.S. Army laboratory in Georgia, and the FBI laboratory in Washington, D.C.

As would be expected, the number of profiles in the national index increased as the number of laboratories uploading profiles increased. The following graph depicts the steady increase in the number of profiles in the national index.



Source: FBI NDIS Program Metrics, February 2001 report

Although the number of laboratories participating in the national index and the number of profiles in the index has steadily increased, it is also important to consider the usefulness of the information in the national index. As noted in the above chart, as of February 2001 there were 23,301 forensic profiles in the national index. Although no exact number is available, in its July 13, 1999 recommendation to the Attorney General, the Commission stated that tens of thousands of evidence samples across the country were untested. In our judgment, the crime-solving potential of CODIS will not be fully realized until a substantial number of forensic profiles are added, especially profiles from cases without a suspect. Convicted offenders cannot be linked with crimes until the DNA profiles from crime-scene evidence are included in CODIS. According to FBI statistics, there was a significant increase in the number of offenders at the state level linked to unsolved crimes as the number of forensic profiles grew. In our judgment, the low number of forensic profiles in the national index from nonsuspect cases appears to be the result of resource shortages at state and local laboratories. Many laboratories do not have the resources to perform DNA testing on old cases or on cases with no suspect. Laboratory personnel are fully occupied trying to keep up with the demand for DNA testing in cases with a suspect. According to the FBI, the police have a suspect in approximately 80 percent of the cases submitted for DNA testing. However, based on

DNA test results, the initial suspect is not the perpetrator in approximately 20 percent of these cases.

In addition to the tens of thousand of cases awaiting analysis, the Commission estimated that several hundred thousand convicted offender samples were awaiting analysis. As state legislatures passed laws requiring the collection of DNA samples, laboratories across the country received an influx of convicted offender samples without necessarily having the capability to analyze them all. Appendix IV discusses some of the factors that have contributed to both the case and convicted offender backlogs.⁴

Additionally, unless the DNA profiles in the national index contain information for specific loci, the profiles are not included when the index is searched. As a result, the profiles are essentially useless at the national level. The NDIS requirements⁵ contain the following provisions:

- Forensic DNA profiles developed using the STR methodology must contain 10 of the required 13 loci for the profile to be searched against at the national index.
- Convicted offender profiles developed using STRs must contain all 13 required loci for the profile to be searched against at the national index.
- Although the national index accepts seven Restriction Fragment Length Polymorphism (RFLP) loci, forensic profiles must contain three of four specific RFLP loci and convicted offender profiles must contain all four specific loci for the profiles to be searched against at the national index.

However, in certain circumstances, a laboratory can request that a specific profile be searched at the national index (even though it has less than the required number of loci) through a procedure called a keyboard search. In addition, state and local index laboratories determine the number of loci a profile is required to have in order to be included in a search of their own indexes. Laboratories can change this search parameter as necessary.

The FBI considers profiles with less than the required number of loci to be incomplete. Each month, the FBI determines the number of complete and incomplete

⁴ The issue of reducing the convicted offender backlog is the subject of another Department of Justice Office of the Inspector General audit.

⁵ In this report, the term “NDIS requirements” refers collectively to the requirements the Memorandum of Understanding places on participating laboratories. The Memorandum of Understanding is established between the FBI and a state index laboratory. These requirements address a wide variety of issues, including the types of profiles accepted at the national index, the required loci for a profile to be included in national index searches, and the safeguarding of the information in CODIS.

profiles in the national index by laboratory. According to the FBI's statistics, as of February 28, 2001, 24 percent of the forensic profiles and 29 percent of the convicted offender profiles were incomplete. The incomplete profiles substantially reduce the effectiveness of CODIS. Again, in our judgment, part of the reason there are so many incomplete profiles in the national index is a lack of resources at state and local laboratories. See Appendix IV for a discussion of resource issues and other factors that affect a laboratory's DNA testing program.

Impact of CODIS

The FBI uses the number of investigations aided to help measure the impact of CODIS. The matching of DNA profiles through CODIS may provide investigative leads in more than one investigation so the FBI decided to focus on investigations aided rather than on the number of DNA profile matches that occurred using CODIS. For example, six rapes in Washington, D.C., were linked to three rapes in Jacksonville, Florida, using CODIS. When the DNA profile from one of these crime scenes matched the DNA profile of a convicted offender, the investigations for all nine cases were aided. Thus one DNA profile match resulted in nine investigations aided. According to the FBI, CODIS had aided 1,733 investigations as of February 2001.

The complete impact of CODIS cannot be easily measured. The use of DNA evidence to link a suspect to a crime can result in a guilty plea by the suspect, saving the criminal justice system the cost of a trial. DNA evidence is also useful to investigators because it helps to determine whether or not a suspect was involved in a crime, reducing the number of hours spent investigating suspects who were not involved in a crime. There are some intangible results associated with CODIS as well. When DNA evidence is used to solve very old crimes, the closure provided to victims and their families is impossible to measure, although it can have a profound effect on those involved.

A second intangible benefit of CODIS is that criminals may be caught earlier and, as a result, taken off the streets before they have the chance to commit additional crimes. A 1982 study (A. N. Groth, R. E. Longo, and J. B. McFadin, "Undetected Recidivism Among Rapists and Child Molesters," *Crime and Delinquency*, Vol. 28, No. 3, 1982, pp. 450-458) used anonymous questionnaires to survey convicted rapists in custody. The study found that these rapists had been convicted of an average of 2.8 rapes and that they had committed an average of 5.2 rapes for which they were never caught. The fact that criminals may be caught sooner through DNA analysis is an important benefit of CODIS.

In conclusion, the FBI has made steady progress toward its goal of having all forensic DNA laboratories participate in the national index. In our judgment, the lack of

forensic profiles and the presence of incomplete profiles in CODIS are problems that must be remedied by the state and local laboratories. Therefore, we have no recommendations for the FBI with respect to the implementation of CODIS. We note, however, that the FBI needs to strengthen its oversight of CODIS. This issue is discussed in Finding No. 2.

2. THE FBI NEEDS TO STRENGTHEN ITS OVERSIGHT OF CODIS

The FBI's management controls over laboratory compliance with regulatory standards, as well as the evaluation of DNA profiles contained in the national index, need improvement. We performed audits at eight laboratories that contributed DNA profiles to the national index. We determined that four of these eight laboratories were not fully compliant with the FBI's quality assurance standards and NDIS requirements. We also noted that six of the eight laboratories uploaded a total of 55 incomplete or unallowable DNA profiles to CODIS out of the 1,308 profiles we tested. Furthermore, the FBI has not established any periodic method of auditing profiles in the national index to ensure compliance with the applicable quality assurance standards and NDIS requirements. If CODIS contains profiles that are inaccurate, incomplete, or unallowable, the database is less useful to the criminal justice system. In our judgment, the presence of unallowable profiles in CODIS could also be viewed as a violation of privacy for the individuals involved.

Our audit work included reviewing the FBI's oversight of: (1) the application process required for a laboratory to participate in the national index, (2) laboratory compliance with the FBI's quality assurance standards (QAS) and NDIS requirements, and (3) the accuracy, allowability, and completeness of the DNA profiles contained in CODIS.

Laboratory Application Process

For each state, only the state index laboratory has the capability to upload DNA profiles to the national index. Consequently, it uploads all DNA profiles for the state. In order to ensure the integrity of the national index, a state index laboratory may not upload DNA profiles to the national index until it completes an application process that includes the items listed below. The laboratory must:

- Sign a Memorandum of Understanding (MOU) with the FBI that delineates the responsibilities of both the FBI and the state index laboratory. Although the state laboratory signs the MOU, all laboratories in the state that upload DNA profiles to the state index are bound by the requirements of the MOU. The state index laboratory is responsible for ensuring that the local index laboratories are in compliance with the MOU and for collecting the required documentation from the local index laboratories and submitting it to the FBI.

- Submit the proficiency test dates for all DNA analysts and other specific documents in which the laboratory certifies that it is in compliance with the QAS.
- Obtain security clearances from the FBI for all laboratory personnel performing DNA analysis.
- Submit technical information concerning the laboratory's DNA testing process. The technical information includes items such as quality control thresholds that allow the FBI to ensure a laboratory's methods produce results that are comparable with those of other laboratories.

Our analysis of the FBI's oversight of the application process disclosed that the FBI adequately tracked the laboratories' progress related to this area. From the 52 files available, we selected a judgmental sample of 30 FBI laboratory files to review. Our sample included 26 laboratories that had completed the application process, 3 laboratories that had started the process, and 1 laboratory that had not begun the process. The files for the 26 CODIS-participating laboratories contained documentation that demonstrated the laboratories had completed all required elements of the application process. Based on documentation in the files of these 26 laboratories, we determined that an average of 6 months was required to complete the application process described above, with a range from 1 day to 28 months. Our review also indicated that the variation in the amount of time laboratories needed to complete the application process seemed appropriate given the unique circumstances in which each laboratory operated.

As we reviewed the FBI's laboratory files, we also examined all correspondence to determine if the FBI worked to facilitate the application process by responding to laboratory questions and concerns. We noted that the laboratory files contained documentation indicating that the FBI not only responded to the laboratories' questions and concerns, but also reminded them about missing or overdue documentation.

Compliance with the QAS and NDIS Requirements

In accordance with the Act, the Director of the FBI issued *Quality Assurance Standards for Forensic DNA Testing Laboratories* (Forensic QAS), effective October 1, 1998, and *Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories* (Offender QAS), effective April 1, 1999. In addition, the FBI developed requirements governing a laboratory's submission of DNA profiles to the national index (NDIS requirements). The FBI is responsible for ensuring that laboratories submitting

DNA profiles to the national index comply with the QAS⁶ and NDIS requirements. The QAS address a wide range of issues related to the testing of DNA samples. Compliance with the QAS helps ensure the accuracy and integrity of a laboratory's DNA test results and uniformity in the quality of DNA profiles submitted by laboratories across the country. Compliance with the NDIS requirements ensures that the national index contains allowable, useful DNA profiles that can be compared among participating laboratories.

At the time of our audit, the FBI did not have the resources to directly evaluate laboratory compliance with the QAS and NDIS requirements. Consequently, oversight was limited to self-certification with the QAS and NDIS requirements on the part of each laboratory. In our judgment, self-certification presents a high risk that the FBI would not necessarily detect instances of noncompliance by the laboratories. In order to test this condition, we audited eight laboratories that contributed DNA profiles to the national index to determine if they were in compliance with the QAS and NDIS requirements. At the time of our audits, the eight laboratories had contributed approximately 24 percent of the forensic profiles and 71 percent of the convicted offender profiles contained in the national index. See Appendix I for a description of the laboratory selection process and a list of the laboratories that we audited.

Specifically, we tested the laboratories' compliance with the 165 Forensic and 148 Offender QAS and NDIS requirements that pertained to laboratory operations. See Appendix III for a description of the standards and requirements included in these numbers. We determined that four of the eight laboratories audited were in compliance with these QAS and NDIS requirements. However, we noted the following areas of noncompliance at the remaining four laboratories.

Proficiency Testing

Section No. 13 of the QAS addresses proficiency testing. The QAS require that laboratory personnel who are actively engaged in DNA analysis undergo external proficiency testing at intervals not to exceed 180 days. In addition, a laboratory is required to include seven specific items in its proficiency test records, and the laboratory is required to inform all proficiency test participants of the final test results. Further, the NDIS requirements state that, for each analyst, the test provider must grade at least two external proficiency tests each year.

⁶ QAS is used to refer to the FBI's quality assurance standards in total (i.e., both the Forensic QAS and the Offender QAS). When only one set of standards is referred to, either Forensic QAS or Offender QAS is used.

Proficiency testing is extremely important to the DNA testing process in that it ensures DNA analysts are capable of producing reliable, accurate DNA profiles. DNA laboratories purchase proficiency tests from test providers who set a due date for each test. The laboratories are not given answers to the tests at the time of purchase. Rather, the analyst's test results must be submitted to the test provider for independent grading and statistical evaluation. The test provider ultimately publishes the individual test results and related statistical analysis for all analysts who submitted results by the due date.

Our audits disclosed that two of the eight laboratories did not comply with all proficiency testing requirements. The Broward County Sheriff's Office Crime Laboratory in Fort Lauderdale, Florida (Broward Laboratory), returned one test per year per analyst to the external test provider and graded the second test in-house, based on the published test results. At the time of our audit, laboratory officials felt that their procedures met the QAS requirement for external proficiency testing. However, the NDIS requirements clearly require that, for each analyst, the test provider must independently evaluate two tests per year. As a result of our audit, the Broward Laboratory implemented a new policy to comply with the proficiency testing requirements. The Florida Department of Law Enforcement, Tallahassee Regional Crime Laboratory, Tallahassee, Florida (Tallahassee Laboratory), did not consistently include all seven required items in its proficiency test records and did not routinely notify participants of their final test results. Participants were only notified if there were problems with a proficiency test. Laboratory management stated that it was laboratory policy to notify recipients only when there were problems with the proficiency tests. Laboratory management agreed to modify the policy to require that all test participants be notified of their test results, and to ensure that proficiency test records included all required seven items. These required items must be included in the proficiency test records in order to demonstrate that each analyst has passed an external proficiency test every 180 days.

Evidence Control

Section No. 7 of the Forensic QAS requires that laboratories have secure areas for evidence storage.

In order to prevent theft or tampering, evidence must be properly secured. Our audits disclosed that the Broward Laboratory and the Miami-Dade Police Department, Crime Laboratory Bureau, Miami, Florida (Miami Laboratory), needed to increase the security over evidence maintained in cold storage.

Although the evidence was stored within secured laboratory space, the refrigerators and freezers containing small items of evidence or extracted DNA were not locked. Since all other evidence was secured in locked rooms or evidence lockers at these two laboratories, it would follow that the cold storage areas should be locked as well. In addition, the cold storage areas at the remaining six laboratories were locked even when the refrigerators or freezers were in locked rooms. In our judgment, security would be increased if all evidence and extracted DNA were stored in locked refrigerators or freezers. Although officials at both laboratories stated that they felt they had implemented controls that would successfully prevent unauthorized access to evidence, the FBI required the laboratories to begin locking the refrigerators and freezers as a result of our audits.

Equipment Calibration and Maintenance

Section No. 10 of the QAS requires that laboratories have a documented program for the calibration of instruments and equipment. As part of that program, laboratories are to document the frequency of calibration for each instrument and must maintain evidence that the required calibrations were performed.

A laboratory must calibrate its instruments to ensure errors are not introduced into the testing process. Our audits disclosed that the Commonwealth of Virginia, Division of Forensic Science Central Laboratory, Richmond, Virginia (Richmond Laboratory), did not have supporting documentation for the calibration of 2 of the 10 pieces of equipment we reviewed. Laboratory officials agreed that all calibrations performed should and will be documented in writing. Further, the Miami Laboratory did not have written policies that specified the required frequency of calibration. Miami officials stated that they were unaware the QAS required frequencies to be included in a laboratory's written calibration program. When the required frequency of calibration is documented in writing, there are clear guidelines for laboratory personnel to follow. The laboratory agreed to document its calibration policies in writing.

Review of Court Testimony

Section No. 12 of the QAS requires that the courtroom testimony of laboratory analysts be monitored annually.

An important part of each analyst's job is to provide courtroom testimony that is understandable to a jury and yet thoroughly explains the DNA test results. Inadequate courtroom testimony could, in essence, negate the power of DNA evidence. Our audits disclosed that the Miami Laboratory could not locate documentation to verify the 1998 monitoring of one analyst's courtroom testimony. Laboratory officials stated that the analyst's testimony was reviewed in 1998 but the documentation had been misplaced. Subsequent to our audit, the laboratory began notifying analysts on a regular basis of the requirement to have their courtroom testimony monitored and to provide documentation of the monitoring to the laboratory.

Analytical Procedures

Section No. 9 of the QAS requires that a laboratory's technical leader or management approve its analytical procedures.

It is important for the analytical procedures to be approved as required in order to demonstrate the laboratory has followed appropriate internal controls when developing its analytical procedures. Our audits disclosed that the Broward Laboratory's analytical procedures were not approved as required. The technical leader stated that he provided input as the procedures were developed but that he had not officially approved the procedures or documented his approval in writing. He also stated that he would document his approval of the procedures in writing.

Safety

Section No. 16 of the QAS states that a laboratory shall have and follow a documented environmental health and safety program.

Our audits disclosed that the Richmond Laboratory did not have an emergency procedures and evacuation plan, which is part of an environmental health and safety program, for the building it occupied. The only emergency procedures and evacuation plan available was for a building the laboratory had not

occupied for six years. This finding was reported in a prior audit conducted by the Potomac Regional Audit Group but had not been corrected.

Laboratory Audits

Section No. 15 of the QAS requires that laboratories undergo annual audits in accordance with specific guidelines. This section also states that once every two years an outside agency must conduct the audit.

Our audits disclosed that all eight laboratories complied with these audit requirements. However, we noted some weaknesses with the audits performed by outside agencies. The outside agencies generally consisted of either DNA analysts from another laboratory or auditors representing an accreditation or certification agency.

The major problem with the audits performed by analysts from other laboratories was that audit findings became mere suggestions. For example, the Richmond Laboratory dismissed many of the findings noted by the Potomac Regional Audit Group during a previous audit. Laboratory management prepared a response stating why they felt specific findings were not appropriate and why they would not be implementing the auditors' recommendations. We noted that the Richmond Laboratory was not in compliance with the QAS's safety requirements and that the laboratory should have corrected this finding rather than disputing it. We included this deficiency as a repeat finding in our audit report.

Although an accreditation or certification agency has the authority to ensure a laboratory takes appropriate corrective action, accreditation or certification audits did not typically focus on compliance with the QAS. These audits covered the entire forensic laboratory, not just the section performing DNA analysis.

Our review of external audit reports at the eight laboratories disclosed that laboratory audits were not always performed consistently. In our judgment, inconsistencies occurred because: (1) different guides were used by those conducting the audits, (2) interpretation of the requirements varied among the individuals conducting the audit work, and (3) the focus of the audits varied depending on the agency performing the work. Although the FBI had identified these issues prior to our audit, FBI officials stated that our audit added an awareness of the full extent of the FBI's responsibilities in ensuring laboratories comply with the QAS. To address these issues, the FBI developed an audit guide that focuses on laboratory compliance with the QAS requirements. An FBI

official stated that, as of January 1, 2002, a CODIS-participating laboratory cannot meet the QAS requirements unless the external audit is conducted using the FBI-developed guide by individuals who have attended the FBI's audit training. The FBI's training class is designed to ensure that the QAS requirements are interpreted consistently. Additionally, to facilitate the use of the audit guide, the FBI entered into a MOU with the major laboratory accreditation organization in the United States. This organization agreed to use the FBI-developed guide in conjunction with its own audit guide to determine if the DNA section of the laboratory is in compliance with the QAS.

The FBI's audit guide states that a laboratory is not in compliance with the QAS audit requirements unless the laboratory can demonstrate that it provided an adequate response to all findings detailed in its previous audit. However, in our judgment, the audit guide alone does not remedy the problem. The FBI should also provide a mechanism for the resolution of audit findings and identify an arbiter for disputes between auditors and laboratories. The resolution of audit findings is the final step in ensuring compliance with the QAS. FBI officials stated that they were aware that it is essential to have a mechanism to resolve audit findings and that they were working on developing a policy to address the issue.

Records Contained in CODIS

The DNA profiles contributed to CODIS are developed either from evidence related to a crime (forensic profiles) or from DNA samples provided by individuals convicted of certain crimes (convicted offender profiles). We reviewed forensic and convicted offender profiles uploaded to CODIS to determine if the profiles were complete, accurate, and in compliance with specific QAS and NDIS requirements. A DNA profile was considered complete if all the loci for which the analyst obtained results were included in the uploaded profile. When the values at each locus in the uploaded profile matched those on the analyst's worksheets, the profile was considered accurate. For seven of the eight laboratories, we reviewed forensic profiles that were uploaded to the national index and, when applicable, convicted offender profiles that were uploaded to the state indexes. We reviewed profiles from the Miami Laboratory's local index because the laboratory's 110 profiles were inadvertently deleted from the national and state indexes.

Inadvertent Deletion of Profiles

We found that the Miami Laboratory's forensic profiles were inadvertently deleted from both the national and state indexes. The problem arose in September 1998 after a new version of CODIS software was installed at the laboratory. Because of the way the software was installed, the laboratory's existing profiles in the state index were deleted when the laboratory uploaded new profiles to the index. As a result, the profiles were also deleted from the national index since it reflects the profiles contained in the state index. The laboratory's CODIS administrator knew that there was a problem and believed, incorrectly, that he had fixed it. Although the CODIS administrator performed additional uploads to the state index, the DNA profiles in the local index were not actually uploaded to the state index due to the software problems.

Although the FBI tracks the number of profiles in the national index by laboratory on a monthly basis, neither the FBI nor the state index administrator recognized that the Miami Laboratory's profiles were no longer in the national or state indexes. As a result, the situation was not corrected in a timely manner. We brought this condition to the FBI's attention when we were preparing to select a sample of profiles to review. Subsequently, the laboratory's profiles were restored to the state and national indexes after the software problem was corrected. Since the profiles were not in the indexes, they could not be searched against for 13 months, delaying any matches that might have occurred between the laboratory's profiles and those in the state or national indexes.

Forensic Profiles

The eight laboratories audited had a total of 3,596 forensic profiles in CODIS as of the dates the audits were conducted. We reviewed a total of 608 forensic profiles that were randomly selected at each laboratory. The forensic profiles were selected from printouts of the profiles contained in CODIS as of a specified date. The results obtained for the sample cannot be projected to the 3,596 forensic profiles that the eight laboratories had contributed to CODIS because we did not use statistical sampling. We reviewed case files to determine if the DNA profiles were complete and accurate, and to determine if the laboratories were in compliance with the seven Forensic QAS and NDIS requirements that pertain to forensic profiles. See Appendix III for information concerning these elements.

We considered a profile compliant with the Forensic QAS if the amount of DNA in the sample was quantified using the appropriate method, and if both technical and administrative reviews of the analyst's work were performed (these tests cover five of the seven criteria elements).

We considered a profile compliant with the NDIS requirements if the profile was allowable for inclusion in the national index (this test covers the last two criteria elements). The NDIS requirements prohibit a laboratory from uploading forensic profiles to the national index that clearly match the DNA profile of the victim or another known person unless the known person is a suspected perpetrator.

Our audits revealed noncompliant forensic profiles at six of the eight laboratories audited.

- The North Carolina State Bureau of Investigation Crime Laboratory, Raleigh, North Carolina, had inadvertently uploaded 32 unallowable profiles to the national index out of the 100 forensic profiles that we examined. These profiles matched the DNA profiles of crime victims or the DNA profiles of known persons who were not suspected perpetrators. These errors occurred because the laboratory was unaware of the NDIS requirements concerning allowable profiles. Laboratory personnel agreed to remove the 32 unallowable forensic profiles from the national index. In addition, the laboratory staff reviewed the remaining 1,280 forensic profiles that had been uploaded to the national index and discovered an additional 218 unallowable profiles. Before we completed our audit work, the laboratory removed all 250 unallowable forensic profiles from the national index. The laboratory also instituted procedures that should ensure the problem will not occur in the future.
- The Richmond Laboratory did not quantify the amount of *human* DNA present in the sample for any of the 75 forensic profiles that we reviewed which were produced using the STR methodology. The laboratory quantified the amount of DNA present in the samples, but the Forensic QAS, Section No. 9, require that laboratories quantify the amount of *human* DNA in a sample because the STR methodology is extremely sensitive. Prior to our audit work the laboratory had instituted a policy requiring analysts to quantify the amount of human DNA in a sample in accordance with the QAS. However, at the time of our audit work, the policy had not been in effect long enough for the outcome to be represented in our sample. We reviewed five additional profiles, developed after the laboratory had

instituted its new policy, and found that the amount of human DNA in the sample was quantified for all five forensic profiles.

We also noted that the Richmond Laboratory uploaded 3 unallowable forensic profiles to the national index out of the 75 profiles we reviewed. Two profiles that matched the DNA profiles of crime victims were uploaded inadvertently. The remaining profile matched the DNA profile of a suspect whom the laboratory knew was cleared of the charge. In this instance, the case file contained notes indicating that the criminal justice agency notified the laboratory that the suspect was cleared of the charge because the suspect acted in self defense. The laboratory should have removed this profile from the national index after receiving notification from the criminal justice agency. Laboratory management agreed the profile should be removed from the national index and stated that all of the profiles the laboratory had contributed to the national index would be reviewed to ensure they were appropriately included in the index.

- The California Department of Justice, Berkeley DNA Laboratory, Berkeley, California (Berkeley Laboratory), inadvertently uploaded 2 inappropriate profiles to the national index out of the 50 forensic profiles we evaluated. These profiles matched the DNA profiles of crime victims. In addition, the laboratory uploaded one incomplete and one inaccurate profile to the national index. The incomplete profile was not tested at one of the NDIS-required loci. Laboratory officials stated that the incomplete profile was an oversight and that they were in the process of testing the required locus for the profile. The inaccurate profile included an extra value at one locus. Laboratory officials explained that the extra value was for a nondiagnostic result and should not have been included in the uploaded profile. The laboratory corrected the uploaded profile by removing the extra value.
- The Broward Laboratory inadvertently uploaded 2 unallowable profiles to the national index out of the 102 forensic profiles we examined. These profiles matched the DNA profiles of crime victims and were therefore unallowable. Subsequent to our audit, the laboratory removed these profiles from the national index.
- The Illinois State Police Springfield Forensic Science Laboratory (Springfield Laboratory) inadvertently uploaded 1 unallowable profile to the national index out of the 100 forensic profiles we evaluated. This profile matched the DNA profile of a crime victim and was therefore

unallowable. The laboratory removed this profile from the national index before we completed our audit work.

- At the Miami Laboratory, we noted 7 incomplete profiles out of the 45 forensic profiles we evaluated. These profiles were missing available test results at one or more loci. The profiles were incomplete due to software difficulties. The laboratory added the missing test results after the software problems were resolved.

As discussed on the preceding pages, we found that 5 laboratories had uploaded a total of 40 unallowable profiles to the national index out of the 608 forensic profiles we evaluated. These profiles matched the DNA of crime victims or other individuals who were not suspected perpetrators in a crime. The FBI's NDIS requirements specify which DNA profiles may be uploaded to the national index. In addition, the NDIS requirements state that appropriate personnel should receive copies of, understand, and abide by the NDIS requirements. At some of the laboratories that we audited, "appropriate personnel" included only the personnel involved in uploading profiles into the local or state database. However, it is the responsibility of the DNA analysts to correctly categorize (label) the DNA profiles they examine based upon the guidelines in the NDIS requirements. If each analyst is not aware of those requirements, a profile may be mislabeled and as a result an unallowable profile may be inadvertently uploaded to CODIS. We also found that local index laboratories uploading DNA profiles to the state index were not always aware that they were required to adhere to all NDIS requirements. In our judgment, all analysts at the local and state index laboratories should be aware of the NDIS requirements in order to reduce the risk of uploading unallowable profiles to the national index. Therefore, the FBI should place special emphasis on ensuring that laboratories and analysts understand the NDIS requirements, specifically those related to profiles that are unallowable in the national index.

In our judgment, uploading unallowable DNA profiles could be viewed as a violation of privacy for the individuals involved. In addition, if a suspect were tied to one or more crimes through unallowable CODIS profiles, the evidence may not be admissible in court. This could affect the outcome of a trial since DNA is often the most compelling evidence linking a suspect to a crime. Furthermore, when unallowable profiles are included in CODIS, it undermines public confidence in DNA databases. To allay concerns over function creep and the use of genetic information for discriminatory purposes, the FBI and DNA laboratories need to scrupulously abide by the law, especially those provisions addressing allowable profiles and allowable uses for the information in CODIS.

In order for the DNA profiles in the national index to be useful to the criminal justice system they must be complete and accurate. For the purposes of this audit, an incomplete profile was one that was missing available test results at one or more loci. When laboratories are notified of a potential match between DNA profiles, they must perform additional work to determine if the match is a true match, or if there are points at which the profiles do not match. As the number of loci included in a DNA profile increases, there is an increase in the points of comparison between DNA profiles with a resulting decrease in the number of “false matches.” Therefore, complete profiles are ultimately more useful because they decrease the amount of time laboratories spend following up on potential matches between DNA profiles. As the number of profiles in the national index grows, it will become increasingly important that the profiles it contains are complete.

While incomplete profiles increase the amount of work done by the laboratories, inaccurate profiles may increase the amount of time investigators spend trying to tie a suspect to a crime. An inaccurate profile in CODIS could prevent the detection of a match between two profiles, depriving investigators of valuable information that could be used to help solve a crime. Additionally, inaccurate profiles in CODIS would also undermine the credibility of DNA databases with the public and with the criminal justice system.

Convicted Offender Profiles

The Broward Laboratory and the Miami Laboratory were local index laboratories that did not perform convicted offender testing. The remaining six state index laboratories had a total of 233,823 convicted offender profiles in CODIS as of the dates the audits were conducted. We reviewed a total of 700 convicted offender profiles. The results obtained for the sample cannot be projected to the 233,823 convicted offender profiles that the six laboratories had contributed to CODIS because we did not use statistical sampling. The profiles were randomly selected at each laboratory from electronic files containing limited information on the offender profiles stored in the laboratories’ state indexes.

We reviewed supporting documentation for the selected profiles to determine if the profiles were complete, accurate, and allowable in the database in accordance with state legislation and the applicable NDIS requirement. We considered an offender profile compliant with the NDIS requirement and state legislation if the profile was obtained from an offender convicted of a crime for which state legislation required that a DNA profile be entered into the state

offender database. See Appendix III for more information on state legislation and the NDIS requirement.

Our audits disclosed noncompliant convicted offender profiles at two of the six laboratories we tested.

- The Berkeley Laboratory uploaded 1 improper profile and 2 incomplete profiles out of the 100 convicted offender profiles that we reviewed. The improper profile was that of an offender who was not convicted of a crime that met the statutory requirements for inclusion in the state index. The laboratory was automatically uploading DNA profiles for individuals listed in the state's sexual habitual offender program because it believed that all these individuals were convicted of qualifying crimes. However, our audit disclosed that not all offenders listed in the program, including the contributor of the profile identified above, were convicted of qualifying crimes. Laboratory officials stated that all offender profiles would be reviewed to ensure that all offenders included in the database were convicted of qualifying crimes. Of the two incomplete convicted offender profiles, one was missing available test results at one of the required loci. The laboratory uploaded the missing information for this profile subsequent to our audit. The second incomplete profile was missing all test results. The laboratory stated that the analyst performing the technical review inadvertently erased the loci values that had been uploaded to CODIS. Laboratory officials also stated that the profile would be uploaded to the state and national indexes after the DNA sample was retested. In addition, laboratory officials stated that the offender sample needed to be retested due to possible contamination.
- At the Springfield Laboratory, 3 of the 100 convicted offender profiles we reviewed were incomplete. Additional information obtained when these profiles were reanalyzed was not uploaded to CODIS. When the samples were first analyzed, the laboratory did not obtain results at all 13 required STR loci. The samples were reanalyzed and results were obtained for the missing loci. This information was not uploaded to CODIS after it was obtained.

Lack of Profile Verification

The unallowable, inaccurate, and incomplete profiles that we found in CODIS emphasize the need for verification of the DNA profiles contained in the

indexes. The QAS-required laboratory audits (discussed on page 21) do not include a review of the DNA profiles uploaded to CODIS. Further, the FBI does not have a system in place to verify the accuracy, completeness, or allowability of the DNA profiles contained in the national index. The Forensic Science Systems Unit recognized this management control deficiency and included auditors in its budget requests for fiscal years 2000 and 2001. Since it has not been able to secure additional resources to develop its own audit capabilities, the unit is considering alternative plans, such as using auditors from other FBI divisions, to review the profiles uploaded to the national index.

Conclusion

The FBI's management controls over laboratory compliance with regulatory standards as well as its evaluation of DNA profiles contained in the national index need improvement. If the FBI does not ensure that the DNA profiles in CODIS are reliable, accurate, and produced by laboratories that comply with the QAS and relevant legislation, the profiles become less useful to the criminal justice system. Although DNA evidence is useful to investigators as they investigate crimes, it can also be used as evidence in a courtroom. If there are doubts about the integrity of a DNA profile or the laboratory that produced it, the DNA evidence can be challenged in court. Although we noted problems with a small percentage of the CODIS profiles reviewed, because of the sensitivity of the information a small percentage is unacceptable. As a result, it is important to verify the accuracy, completeness, and allowability of the DNA profiles in the national index. In addition, we noted that some laboratories did not fully comply with the QAS and that audit findings were not always resolved. These facts indicate that a formal process is needed to ensure that laboratories uploading profiles to the national index adequately resolve any audit findings that result from the QAS-required audits.

Recommendations⁷:

We recommend that the Director of the FBI:

1. Require that the accuracy, completeness, and allowability of the DNA profiles in the national index be routinely verified through audits or other means.
2. Ensure that analysts performing DNA testing at laboratories uploading DNA profiles to the national index are aware of the NDIS requirements, particularly those requirements delineating the types of allowable profiles.
3. Develop and implement a process that will ensure laboratories adequately resolve all deficiencies noted during the QAS-required audits.

⁷ We issued an audit report to the FBI for each of the eight laboratories audited. Since the FBI provided oversight while the laboratories took corrective action to resolve our audit findings, we will not provide additional recommendations to address the state and local laboratory audit findings in this report. See Appendix I for a list of the laboratories audited.

3. THE NIJ'S OVERSIGHT OF DNA GRANT FUNDING

Our audit disclosed that the LIP grants awarded by the NIJ were generally made in accordance with the Act. However, our examination of the LIP grants awarded through Congressional earmarks disclosed that the NIJ did not require one grantee to adhere to the match requirement. NIJ officials stated that the match requirement was inadvertently omitted from the grant documents. The improperly awarded grant funds could have been used to fund one or more of the 15 approved LIP grant applications that did not receive funding under the program due to insufficient funds.

We reviewed the NIJ's oversight of the LIP to determine if grants were made in accordance with the Act. The NIJ awarded 129 grants, totaling \$30.7 million, under the LIP program in fiscal years 1996 through 2000. Grantees were selected based on the merits of grant applications submitted to the NIJ. Congress also determined the recipients and amounts of seven additional grant awards, totaling \$9.6 million, through language in annual appropriation bills. Of the Congressionally directed grants, \$1.4 million was not related to CODIS but rather to forensic investigation of arson and explosions. Grantees receiving funds through Congressional earmarks were required to adhere to the Act unless the appropriation language indicated otherwise. As of the end of the grant program, 15 grant applications from qualified agencies could not be funded due to insufficient funds.

The Act authorized grants to states and units of local government or combinations thereof. These grants were to be used to improve the capacity and capability of public forensic laboratories in performing forensic DNA testing. The Act required that the grants awarded fund a maximum of 75 percent of the annual costs for the program outlined in the grant application, with the grantee funding the remaining 25 percent of the total program costs through matching funds. In addition, the Act stated that a maximum of 10 percent of the grant funds could be used for administrative costs.

We evaluated the recipients of all 129 LIP grants to determine if grants were made to eligible recipients and noted no deficiencies. We also examined specific grant awards to determine if the awards complied with the Act's grantee match requirement and indirect cost limitation. Our review was limited to the grants awarded to the eight laboratories we audited and to the seven grants awarded through Congressional earmarks. Our evaluation disclosed that the grants the NIJ awarded based on grant applications complied with the Act's grantee match requirement and the indirect cost limitation. However, we noted two grants, totaling \$1,377,846, awarded to the University of Central Florida through a Congressional earmark that did not call for the grantee to provide matching funds. The grantee should have supplied matching funds such that the grants

funded 75 percent of the project's total costs. Therefore, we are questioning costs of \$459,282 [(\$1,377,846 ÷ 0.75) x 0.25]. NIJ officials agreed that matching funds should have been required and stated that the requirement was inadvertently omitted from the grant documents. NIJ officials stated that they would determine whether the grantee incurred other costs that would be acceptable for grant provisions.

Grantees were not required to participate in CODIS. We reviewed a list of all grantees during the 5-year grant program to determine if grant funds also generated the addition of DNA profiles to CODIS. We found that, of the 129 LIP grants awarded, 44 grants (34 percent) totaling \$9,252,173 were made to entities not contributing DNA profiles to CODIS. However, some of the grantees used the funds to develop the capacity to participate in CODIS or to expand CODIS programs. NIJ and FBI officials stated that they felt the LIP grants had accomplished the intended goal, which was to improve the capacities and capabilities of forensic laboratories to perform DNA testing.

Recommendation:

We recommend that the Assistant Attorney General, Office of Justice Programs, require the Director of the NIJ to:

5. Remedy \$459,282 in questioned costs that occurred because the NIJ did not require the University of Central Florida to contribute matching funds for the project funded by its LIP grants.⁸

⁸ Recommendation number 4 has been omitted; see Appendix VII for details.

OTHER REPORTABLE MATTERS

During the course of this audit, we considered the possibility of the FBI charging user fees for the use of CODIS software, which is currently provided free of charge to both domestic and foreign laboratories. The FBI has the authority to charge nonfederal agencies for use of the CODIS software under 31 U.S.C. §9701 (b). In addition to domestic laboratories, there were 26 laboratories in 12 foreign countries⁹ using the CODIS software as of March 2001.¹⁰ According to FBI officials, the FBI does not charge domestic or foreign laboratories a CODIS user fee because:

- Its policy is to provide technical and scientific assistance without cost to law enforcement agencies.
- It would not be worthwhile to collect a fee. The revenue generated by charging an annual user fee would be minimal because the FBI would incur costs to set up an accounting, payment, and reporting structure for the collection of the fees.
- It is consistent with the spirit of cooperation that currently exists among forensic laboratories and law enforcement agencies in many countries.

For example, FBI officials stated that the FBI depends on maintaining a cooperative working relationship with foreign law enforcement agencies as it investigates major international crime cases such as the bombing of the U.S. embassies in Kenya and Tanzania. In addition, according to FBI officials, the FBI has received valuable technology and information from foreign laboratories at no cost, including the receipt of forensic material database information and software from Canada and crime scene imaging and documentation software from Italy. FBI officials believe that the FBI would have had to spend substantial amounts of money to develop its own software for these systems. Ultimately, FBI officials believe that the FBI receives a greater benefit by sharing technology with foreign laboratories than it would by charging foreign laboratories an annual CODIS user fee.

⁹ The 12 foreign countries are Australia, Belgium, Canada, China (Hong Kong Special Administrative Region), Denmark, Finland, Italy, Netherlands, Norway, Spain, Switzerland, and the United Kingdom.

¹⁰ The FBI provides software, training, standard maintenance, and technical assistance to these foreign laboratories free of charge. However, foreign laboratories are required to pay for the travel costs associated with the on-site installation of the software at the laboratory and for the travel costs associated with laboratory personnel that are sent to the United States for training.

Based on our analysis of cost recovery opportunities, and taking into account the overall cost/benefit to the Department, we do not believe a CODIS user fee to be worth pursuing at this time.

STATEMENT ON MANAGEMENT CONTROLS

In planning and performing our audit of CODIS, we considered the FBI's management controls for the purpose of determining our auditing procedures. In addition, we evaluated the process used by the NIJ to award grants under the LIP. The evaluation of the FBI and NIJ were not made for the purpose of providing assurance on the management control structure as a whole; however, we noted certain matters that we consider to be reportable conditions under generally accepted government auditing standards.

Reportable conditions involve matters coming to our attention relating to significant deficiencies in the design or operation of the management control structure that, in our judgment, could adversely affect the FBI's ability to effectively manage CODIS operations or could adversely affect the NIJ's ability to administer the grants under its control. We noted one deficiency concerning the grants awarded by the NIJ, discussed in Finding No. 3. However, we did not consider this deficiency to be a result of systemic management control issues. We identified weaknesses in the FBI's oversight of CODIS as discussed in Finding No. 2. Because we are not expressing an opinion on the FBI's management control structure as a whole, this statement is intended solely for the information and use of the FBI in managing CODIS operations.

Statement on Compliance with Laws and Regulations

As required by Government Auditing Standards, we tested FBI records pertaining to CODIS and CODIS records at the national, state, and local indexes to obtain reasonable assurance about the FBI's compliance with laws and regulations, that, if not complied with, we believe could have a material effect on CODIS operations. Compliance with laws and regulations applicable to CODIS records at the national index level is the responsibility of FBI management. In addition, we reviewed pertinent LIP grant documents to obtain reasonable assurance about the NIJ's compliance with laws and regulations, that, if not complied with, we believe could have a material effect on the administration of the LIP. Compliance with laws and regulations applicable to qualifying LIP applicants for grant eligibility and to the administration of the LIP grants is the responsibility of NIJ management. An audit includes examining, on a test basis, evidence about compliance with laws and regulations. The pertinent legislation and the specific regulations it contains are as follows:

DNA Identification Act of 1994

The DNA Identification Act of 1994:

- authorized the FBI to establish and maintain the national index system;
- set guidelines for the inclusion of DNA profiles in the national index system and for the participation of state and local laboratories;
- set up the DNA Advisory Board, an entity that was to compose standards for quality assurance with which CODIS-participating laboratories would have to comply and which the Director of the FBI could then formally institute;
- specified several standards for those laboratories that receive LIP grant funds and laboratories that contribute profiles to the national index system, including privacy protection standards related to the information in the national index system;
- established criminal penalties for individuals who knowingly violate the privacy protection standards and provided that access to the national index system was subject to cancellation if the quality control and privacy requirements were not met;
- restricted LIP recipients to States and units of local governments or combinations thereof;

- limited the use of LIP grant funds to carrying out all or a substantial part of a program or project intended to develop or improve the capability to analyze DNA in a forensic laboratory;
- restricted the federal share of the LIP grants to 75 percent of the total cost of the project described in the application;
- limited LIP grant administrative expenses to 10 percent of the funds received;
- required that, for 5 years after the enactment of the DNA Identification Act, the FBI submit an annual report to Congress listing the results of the proficiency tests for FBI Laboratory personnel; and
- directed the NIJ to award a grant for up to \$250,000 to determine if it was feasible to have a blind external proficiency testing program for forensic DNA analysis.

Privacy Act of 1974

The Privacy Act of 1974 required the FBI to publish a notice in the Federal Register concerning the proposal to establish a new system of records (specifically the national index system).

Coverdell Amendment

The Coverdell Amendment required the Attorney General to submit an implementation plan for collecting DNA samples from federal convicted sex offenders.



Our tests revealed that the FBI complied with all applicable legislation. As discussed in Finding No. 3, we noted that the NIJ did not comply with the DNA Identification Act of 1994 because one grantee received two grants that did not require it to provide matching funds.

OBJECTIVES, SCOPE, AND METHODOLOGY

The objectives of our audit were to determine the extent of state and local laboratory participation in CODIS, particularly for those entities receiving laboratory grants and to evaluate the FBI's implementation and monitoring of CODIS.

We conducted our audit in accordance with Government Auditing Standards and included such tests as were considered necessary to accomplish the audit objectives. Our audit generally covered the period October 1998 through January 2001. To accomplish the objectives of the audit, we:

- interviewed FBI and NIJ officials responsible for maintaining and overseeing CODIS and the LIP, in order to review compliance with requirements and management controls governing their systems and processes;
- determined the nature of the collaboration between the FBI and the NIJ on the LIP;
- collected data from the FBI's software contractor and the FBI regarding the contractual agreement between them for CODIS development and user support, including performance measurements and payments; and
- gathered information from the FBI regarding the current levels of CODIS participation, which included the number of: (1) profiles in the national index, (2) laboratories that have completed the application process for the national index, (3) CODIS laboratories, and (4) investigations aided by CODIS.

In addition, we conducted audits at eight CODIS-participating laboratories to determine if they were in compliance with the QAS and NDIS requirements. A description of the laboratory selection process, along with a listing of the eight laboratories we audited, is discussed on the following page. At these laboratories we:

- interviewed laboratory officials responsible for maintaining CODIS, assuring compliance with quality assurance standards, and maintaining records on DNA employees, such as qualifications, training, and proficiency testing;
- toured the laboratory facilities to physically verify each laboratory's adherence to its own policies on security and evidence control, as well as to observe compliance with various QAS issues;

APPENDIX I

- reviewed laboratory DNA and CODIS-related protocols and operating manuals including, but not limited to, guidelines on writing reports, interpretation of data, frequency of equipment calibration and maintenance, laboratory security, evidence handling, proficiency testing requirements, and corrective action;
- reviewed the case files for selected forensic DNA profiles to determine if the profiles uploaded to CODIS were complete, accurate, and in compliance with the seven applicable QAS and NDIS requirements; and
- reviewed supporting documentation for selected convicted offender DNA profiles to determine if the profiles were complete, accurate, and included in the database in accordance with state legislation and the one applicable NDIS requirement.

We were unable to obtain the convicted offender profile information directly from the national index because of the large number of profiles involved and because internal controls at the national index prohibit the dissemination of information in an electronic format. Therefore, the laboratories provided us with the convicted offender profile information in an electronic format from their state indexes. The FBI stated that the state index electronic files were an accurate reflection of the laboratories' offender profiles contained in the national index.

We primarily relied on documentation that accompanied the offenders' blood samples submitted by the state corrections agencies for determining whether the offenders' conviction offenses permitted their DNA profiles to be in the database. In a few instances where sufficient information was not available in the documentation that accompanied the blood sample, laboratory staff searched criminal history records to obtain the conviction offense information. We compared the legal citation for the offender's crime as reported on the submitted information and criminal history record information with the legal citations for the qualifying offenses as listed in the state legislation.

We audited the eight laboratories listed on the following page and issued a separate report to the FBI for each laboratory. The FBI provided oversight while the laboratories took corrective action to resolve our audit findings. Of the eight laboratories audited, the FBI asked that we audit the three laboratories located in Florida. We selected the remaining five laboratories based on the large number of DNA profiles the laboratories had uploaded to NDIS while giving consideration to the selection of a geographic distribution of laboratories throughout the country.

APPENDIX I

- Broward County Sheriff's Office Crime Laboratory, Fort Lauderdale, Florida
Audit Report No. GR-80-00-009, issued April 2000
- Florida Department of Law Enforcement Tallahassee Regional Crime Laboratory
Audit Report No. GR-80-00-011, issued May 2000
- Miami-Dade Police Department Crime Laboratory Bureau, Miami, Florida
Audit Report No. GR-80-00-013, issued June 2000
- North Carolina State Bureau of Investigation Crime Laboratory,
Raleigh, North Carolina, Audit Report No. GR-40-00-013, issued June 2000
- California Department of Justice Berkeley DNA Laboratory
Audit Report No. GR-90-00-019, issued June 2000
- Illinois State Police Springfield DNA Laboratory
Audit Report No. GR-50-00-025, issued August 2000
- Pennsylvania State Police Greensburg DNA Laboratory
Audit Report No. GR-70-00-017, issued September 2000
- Virginia Division of Forensic Science Central Laboratory, Richmond, Virginia
Audit Report No. GR-30-00-005, issued September 2000

GLOSSARY OF TERMS AND ACRONYMS

CODIS Administrator: the person at each laboratory that is responsible for the administration and security of the laboratory's CODIS program. The position can also be referred to as CODIS Manager or CODIS Custodian. The CODIS Administrator is required by the QAS for each laboratory with a convicted offender database, although all CODIS laboratories should have someone filling that role.

Convicted Offender Database: consists of DNA profiles from convicted offenders. Convicted offenders are persons who have been convicted of crimes in state, and/or local courts where the applicable law permits establishment of a DNA profile for the convicted person.

Deoxyribonucleic Acid (DNA): DNA is found in almost all living cells, and carries the encoded information necessary for building and maintaining life. This encoded information is what makes each person an individual. Human DNA resembles a spiral staircase. The steps of the staircase consist of two of four possible chemicals. The order in which the chemicals are arranged is called the DNA sequence. It is this unique sequence that is determined when a DNA sample is typed.

DNA Profile: a set of DNA identification characteristics, i.e., the particular chemicals at the various DNA locations (loci), which permit the DNA of one person to be distinguishable from that of another person.

DNA Sample: a body tissue or fluid sample (blood or semen for example) that can be subjected to DNA analysis.

DNA Typing: the process by which a DNA sample is examined and a DNA profile is produced.

Forensic Database: consists of DNA profiles from persons whose identities are not known with certainty and who left DNA at the scene of a crime or whose DNA was carried away from it. For example, a DNA profile may be developed from a bloody knife found at a crime scene or found in a trash dumpster.

APPENDIX II

Investigations Aided: the primary measuring unit that the FBI uses to quantify the success of CODIS. An investigation is aided when a DNA match through CODIS either identifies a potential suspect or links violent crimes together. In addition, the information provided by the DNA match must be new information that would not have been otherwise developed.

Local DNA Index System (LDIS): generally contains DNA profiles for one laboratory. LDIS records are used to search for DNA matches and, at the discretion of the LDIS laboratory, are uploaded to the next CODIS database level (SDIS).

Loci: the plural form of locus.

Locus: a specific physical location on a chromosome. Analogous to an address for a house.

National DNA Index System (NDIS): the FBI-maintained national component to CODIS. NDIS contains DNA profiles uploaded from approved State DNA Index Systems.

Polymerase Chain Reaction (PCR): a method used to replicate specific portions of the DNA strands. The DNA is heated, causing the two strands to separate like a zipper. The two DNA halves are then cooled and mixed with a special enzyme. The result of this process is the creation of two DNA strands identical to each other and to the original DNA strand. This process is repeated many times to replicate a desired DNA sequence millions of times in a matter of hours. PCR is especially valuable because it does not require high quality or large quantities of DNA. Also, this method lends itself to automation and less labor-intensive typing.

Restriction Fragment Length Polymorphism Analysis (RFLP): a technique that uses probes to detect variation in a DNA sequence according to differences in the length of DNA fragments that are created using specific enzymes. These enzymes act like microscopic scalpels and cut the DNA strands at specific points, producing fragments that can be analyzed. The combination and number of chemical repeats within each particular sequence determine the size of the fragment and the differences among individuals. RFLP was used predominantly by DNA laboratories until newer technology was developed. In the past, it could take as long as a couple of weeks to obtain results using RFLP. It requires the use of a sizeable amount of good quality DNA.

APPENDIX II

State DNA Index System (SDIS): contains the state-level DNA records uploaded from LDIS sites within the state. SDIS is the state's repository of DNA identification records and is under the control of state authorities. The SDIS laboratory serves as the central point of contact for access to NDIS.

Short Tandem Repeats: short repeating units of identical chemical sequences arranged in direct succession in a particular region of the DNA.

Short Tandem Repeat Analysis (STR): refers to a DNA typing method that utilizes PCR technology to quickly amplify and analyze sections of DNA that contain short tandem repeats. The number of repeated sequences in specific portions of the DNA varies from person to person. This method allows a high level of discrimination, since 13 loci are examined and subsequently compared with other samples. STR also requires considerably less time and less DNA than the RFLP technology.

AUDIT CRITERIA

Quality Assurance Standards

The QAS, recommended by the DNA Advisory Board and formally instituted by the Director of the FBI, are one of the key sources of criteria for an audit of a CODIS-participating laboratory. Two sets of standards have been instituted: the *Quality Assurance Standards for Forensic DNA Testing Laboratories* effective October 1, 1998 (Forensic QAS); and the *Quality Assurance Standards for Convicted Offender DNA Databasing Laboratories* effective April 1, 1999 (Offender QAS).

The Forensic QAS contain 155 elements organized under 15 headings, and the Offender QAS contain 136 elements also organized under 15 headings. The information below serves only as a synopsis of these headings, and does not capture many of the individual elements contained under each heading. The use of the QAS in this audit was specific to the laboratory unit being audited. In other words, the 155 Forensic QAS elements were used to audit the portion of a laboratory performing DNA analysis on forensic samples, and the 136 Offender QAS elements were used to audit the portion of the laboratory unit performing DNA analysis on convicted offender samples. To demonstrate the similarities between the two sets of QAS, the elements were separated into those that were either identical or similar and those that were unique to just one set of QAS. There are a total of 119 shared (identical or similar) elements, 36 elements unique to the Forensic QAS, and 17 elements unique to the Offender QAS (delineated by heading below).

- The Quality Assurance Program: one should exist in writing and should contain the required categories of standards. This section contains 15 shared elements.
- Organization and Management: key roles and duties should be accounted for in writing, as should be the interrelation between the personnel involved in DNA analysis. This section contains 3 shared elements and 1 element unique to the Offender QAS.
- Personnel: personnel filling key roles should be properly educated, trained, and should be performing duties appropriate to their position. This section contains 19 shared elements and 5 elements unique to the Offender QAS.
- Facilities: the physical design of the laboratory and additional controls should ensure the integrity of laboratory security and minimize contamination. This section contains 5 shared elements and 1 element unique to the Offender QAS.

APPENDIX III

- Evidence Control (Forensic QAS only): the laboratory should have a documented control system, and the necessary internal controls to implement it, to ensure the integrity of the evidence and to govern the final disposition of the evidence. This section contains 7 unique elements.
- Sample Control (Offender QAS only): the laboratory should have a documented control system and necessary internal controls to implement it, to ensure the integrity of the offender samples. This section contains 5 unique elements.
- Validation: the laboratory should take the required steps to demonstrate (validate) that it and its analysts are capable of using certain equipment and methods properly. This section contains 8 shared elements and 5 elements unique to the Forensic QAS.
- Analytical Procedures: every procedure used by the laboratory in the DNA analysis process, including those reagents required in the process, should be described in detail in writing and formally approved by laboratory management. This section contains 19 shared elements and 13 elements unique to the Forensic QAS.
- Equipment Calibration and Maintenance: the laboratory should establish a written program for ensuring that equipment used for DNA analysis receives regular calibration and maintenance. Such calibration and maintenance should be clearly documented and be based upon independent national standards. This section contains 8 shared elements.
- Reports: the laboratory should have written guidelines for maintaining documentation that would thoroughly support the conclusions made in a report regarding case evidence. Reports should contain QAS-specified information and written policies should exist to govern the release of such information. This section contains 2 shared elements and 10 elements unique to the Forensic QAS.
- Review: administrative and technical reviews should be conducted of all reports and supporting documentation for all evidence, to ensure the quality of the conclusions and supporting documentation. The testimony of analysts in court should also be reviewed. This section contains 2 shared elements, 1 element unique to the Forensic QAS, and 1 element unique to the Offender QAS.

APPENDIX III

- Proficiency Testing: those actively engaged in DNA analysis should complete an external proficiency test (a test from an outside agency or commercial test provider that measures an analyst's skill in performing DNA analysis correctly) every 180 days. Such tests should be reviewed and documented as delineated in the QAS. This section contains 16 shared elements.
- Corrective Action: written procedures should exist that govern a laboratory's documentation and resolution of errors made during a proficiency test or DNA analysis. This section contains 2 shared elements.
- Audits: the laboratory should undergo an audit every year, and at least every other year this audit should be conducted by an external entity. This section contains 17 shared elements.
- Safety: the laboratory should have and follow a written environmental health and safety plan. This section has 1 shared element.
- Subcontractor of Analytical Testing for Which Validated Procedures Exist: a laboratory making use of a subcontractor for any part of the DNA analysis process should establish certain specified controls to ensure the integrity of the subcontractor's work and results. This section contains 2 shared elements and 4 elements unique to the offender QAS.

NDIS Requirements

The standards specific to laboratories participating in the national index (generally referred to as NDIS requirements) are contained in the MOU that is enacted between each state index laboratory and the FBI. It is important to note that the MOU covers the participation of the state index laboratory and any local index laboratories that upload profiles to that state index laboratory. Therefore, even though these local index laboratories do not receive national index information or sign the MOU directly, they are to comply with NDIS requirements.

The MOU requires that its participants comply both with general requirements already issued (*i.e.*, federal legislation, the QAS) as well as requirements specific to the national index that accompany the MOU in the form of appendices. These appendices are as follows: Appendix A-NDIS Responsibilities, Appendix B-NDIS Data Acceptance

APPENDIX III

Standards, and Appendix C-NDIS Procedures Manual.¹¹ From these appendices, 17 elements were included as part of our audit criteria, as described in the remainder of this section.

Our audit criteria included the following 10 elements from Appendix A. Not included in our count are: (1) elements in Appendix A that are also included in the QAS, (2) elements not consistent with our audit scope or objectives, and (3) elements that only require compliance with other established criteria (such as the QAS, federal legislation, or other MOU appendices).

- Comply with FBI requirements for physically and electronically safeguarding CODIS against unauthorized use, including providing an appropriate and secure site for the NDIS system.
- Designate one agency within each state to be responsible for ensuring that conditions and standards for participation in the national index are met.
- Designate one CODIS liaison within the state agency to handle communications with the FBI.
- Ensure that appropriate personnel are provided copies of, understand, and abide by the NDIS Procedures Manual.
- Identify in writing, in prescribed form, personnel approved to access CODIS and ensure that access to CODIS is limited to approved personnel.
- Maintain records on these personnel, including proficiency testing records and any other report required by the FBI, for a period of 10 years.
- Conduct background investigations of personnel designated to input data to or access the national index.
- Maintain a system of controls to ensure that DNA records are kept as long as they are substantiated by the laboratory's internal records and are allowed to be retained by federal or state law, by judicial decree or by consent, and used in local, state, and national indexes in accordance with the Act, applicable state law, and for the national index, in accordance with the Privacy Act of 1974. This is the only

¹¹ The manual, a collection of operational procedures to be followed for various processes pertinent to the functioning of NDIS, was actually issued separate from the MOU although it is still considered an appendix to the MOU.

APPENDIX III

NDIS requirement that pertains to the convicted offender profile sample as well as the forensic profile sample.

- Report on a monthly basis confirmed national index matches to the FBI in a form prescribed by the FBI.
- Provide to the FBI a written report of deletions/modifications within 10 business days of discovering a DNA record requires deletion/modification.

Our audit criteria included the following four elements from Appendix B. Not included in our count are: (1) elements in Appendix B that are also included in the QAS, (2) elements not consistent with our audit scope or objectives, and (3) elements that only require compliance with other established criteria (such as the QAS, federal legislation, or other MOU appendices).

- Test results for nine RFLP loci are accepted at the national index. However, an RFLP forensic profile will not be included in the national index unless the laboratory tests for four specific loci. The laboratory must obtain results for three of these four loci for a forensic profile to be searched against.

An RFLP convicted offender profile will not be included in the national index unless the laboratory tests and obtains results for the four required loci.

- Laboratories using STR technology must use one of the FBI-approved kits.
- An STR forensic profile will not be included in the national index unless the laboratory tests for all 13 loci that are accepted at the national index. The laboratory must obtain results for 10 of the 13 loci for a forensic profile to be searched against.

An STR convicted offender profile will not be included in the national index unless the laboratory tests and obtains results for all 13 loci.

- Only forensic profiles derived from crime scene evidence matching the suspected perpetrator(s) or an unknown individual can be uploaded to the national index. Profiles clearly matching the victim or any known person other than the suspected perpetrator(s) cannot be uploaded to the national index. However, if the forensic profile is a mixture that cannot be clearly separated into a portion matching the victim or other known person and the portion matching the suspected perpetrator, such a profile would be accepted.

APPENDIX III

Only one set of procedures from the NDIS Procedures Manual (considered to be MOU Appendix C) added to our audit criteria. The remainder of the manual consisted of sets of procedures outside the scope of our audit. The one set of relevant procedures contained detailed instructions on confirming and documenting candidate matches, both for case-to-case matches as well as case-to-offender matches. The following three specific elements from this set of procedures were included in our audit criteria.

- Candidate matches must be resolved within 30 business days. Resolution is explained as either refuting or confirming that the candidate match is a valid match.
- In circumstances where a match is confirmed between two cases, at a minimum the law enforcement agencies investigating the cases must be notified.
- A report should be generated and filed for each confirmed candidate match, including at a minimum, the prescribed forms and information delineated in the procedures.

Although not considered additional audit criteria, the NDIS Procedures Manual did contain helpful definitions that clarified the proficiency testing terms contained in the QAS. The 180-day maximum interval between completion of external proficiency tests is defined as the time between the completion of one proficiency test (*i.e.*, submitting the test results to the external provider) and the start of the next test. External tests are further explained as obtained from and submitted to an external provider.

State Legislation

The collection of DNA samples from specified convicted offenders and the establishment of a convicted offender DNA database has been legislated in every state. However, the legislation varies from state to state, particularly in the number and types of crimes that require collection from an offender. The state statutes governing the laboratories we audited varied from the collection of a DNA sample from all felons (Virginia) to the collection of a DNA sample for crimes classified as or related to sexual assault (Illinois). All of the statutes include sexual crimes and, all but the California statute applied to offenders convicted previously and still incarcerated at the time the statute became effective. All applied to juveniles except the North Carolina statute.

APPENDIX III

The offender profiles reviewed were governed as follows:

- California Penal Code §§295, 3060.5 and California Government Code §76104.5, effective in 1989
- Florida State Statute §943.325, effective January 1, 1990
- Illinois State Statute §730.5, effective July 1, 1990
- North Carolina State Statute §15A-266, effective July 1, 1994
- Pennsylvania Consolidated Statutes Title 35, §7651.101, effective in May 1995
- Code of Virginia §16.1-299; 19.2-310.2 *et seq*, effective July 1, 1989

FACTORS AFFECTING FORENSIC DNA TESTING LABORATORIES

There are a wide variety of factors, often outside the control of any one agency or organization, that can affect the extent to which a laboratory or a state has utilized CODIS and contributed DNA profiles to the national index. Because these factors affect the success of CODIS at the national level, a brief overview is included here. Some of the factors are interrelated and can include very complex issues; therefore, our discussion is only an overview and does not include all aspects of this subject.

DNA Technology

Currently, DNA laboratories use one of three methods to develop DNA profiles from crime-scene evidence or convicted offender samples: the Dot Blot method, the STR method, or the RFLP method. All of these methods focus on areas of DNA that vary widely from one person to the next. These areas are considered junk DNA because they do not “code” for anything (*i.e.*, the DNA does not translate into a personal identifying characteristic like “blue eyes” or into a genetic predisposition for disease). Unfortunately, the DNA profiles produced using one method are not comparable to the DNA profiles produced using a different method.

The three methods currently used to produce DNA profiles have both advantages and drawbacks. The Dot Blot method is the least discriminating (able to distinguish one person’s DNA from that of another person) of the three methods but it is fast and can be performed using small amounts of DNA and degraded DNA. DNA profiles developed using the Dot Blot method are not accepted at the national index because they are not discriminating enough to be useful with extremely large populations. The RFLP method is very discriminating but requires large amounts of good quality DNA and is the most time-consuming method. As of February 2001, RFLP profiles accounted for 34 percent of the profiles in the national index. The STR method is also very discriminating when 13 loci are tested, but unlike RFLP, small amounts of DNA and degraded DNA can be used. In addition, the STR testing can be completed in a matter of days. As of February 2001, STR profiles comprised 66 percent of the profiles in the national index. Since STR analysis is both fast and discriminating, many laboratories are in the process of switching to this method from either RFLP or Dot Blot.

APPENDIX IV

Laboratories that have a well-established RFLP program face a time-consuming process with many obstacles as they switch to an STR program. The laboratory has to obtain different equipment and supplies, train its staff, and may need to change the physical configuration of the laboratory. It generally takes months to train analysts in STR analysis. The analysts spend most of their time performing training-related activities so they have little time to perform RFLP analysis on DNA samples. As a result, a laboratory's backlog may increase as it switches to STR testing. In addition, many laboratories use STRs to retest all of the DNA samples previously tested using RFLP. This is a time, labor, and material-intensive process, and also increases a laboratory's backlog since the RFLP-tested samples become part of the STR-testing backlog.

The incompatibility between RFLP and STR results can greatly impact how many matches are made in a state if the convicted offender samples are tested with STRs but forensic samples are tested using RFLP. When two different methods are used the number of matches will be reduced. Thus, the method(s) a laboratory has chosen to use can impact the effectiveness of the DNA indexes in solving crimes. The method(s) used affect how many matches occur and how many samples are waiting to be analyzed (in a given time period a laboratory using RFLP will not be able to process as many cases as a laboratory using STRs, all other factors being equal). Those laboratories using Dot-Blot are not able to contribute DNA profiles to the national index so their work benefits only state and local laboratories.

Resource Issues

A few examples of the type of resource issues encountered by the laboratories are discussed below.

- **Manufacturers:** if a manufacturer is backordered on equipment or supplies, it might delay a laboratory's development of new or enhanced analysis capability. The number of samples a laboratory is capable of analyzing can be reduced if the equipment and supply manufacturers are backordered on items the laboratory needs. The laboratory must wait to change its methodology or increase its analysis capability until it can obtain the necessary supplies and equipment.
- **Funding:** the funding received by a laboratory often depends on the priority state or local legislators place on the laboratory's DNA activity. Often, a laboratory does not receive additional state or local funding for its DNA testing program until the program has produced results (i.e., crimes are solved based on DNA evidence).

APPENDIX IV

Many laboratories use federal grants to develop or enhance DNA testing programs until state or local funding increases.

- Personnel: the forensic applications of DNA science have been in existence for a relatively short period of time (since the late 1980s, at the earliest, in the United States) and consequently the pool of DNA analysts is fairly small. Personnel that meet the FBI's QAS for education and experience are in high demand and can be difficult to find and retain. A laboratory's DNA program may almost come to a halt if one or two key people leave the laboratory. Therefore, personnel issues can greatly affect a laboratory's progress as it develops a DNA-testing program.

State Legislation

All 50 states have added a DNA collection statute to their legislation. These statutes require that offenders convicted of specific crimes provide DNA samples for testing. The DNA profiles developed from the samples will be added to the state's convicted offender database. Many of the state statutes did not contain appropriations to cover the cost of collecting, analyzing, and entering all of these DNA samples into CODIS. When this factor is combined with the slow development of laboratory technology and facilities and the limited availability of DNA analysts, the end result is a growing backlog of samples waiting to be processed.

Further complicating convicted offender sample processing is the fact that some state statutes divide up the responsibility for sample collection among several different organizations such as the state's Department of Corrections and the Office of Probation and Parole. The amount of time that a laboratory spends coordinating, instructing, and corresponding with the agencies collecting the samples reduces the amount of time laboratory personnel have to perform DNA analysis, which ultimately increases a laboratory's sample backlog.

Role of Sample Collection Agencies

As mentioned in the previous section on state statutes, state laws often require agencies that are not connected to the laboratories to oversee the collection of convicted offender samples and the safe transfer of those samples to the laboratory. These agencies face the same hurdles as the laboratories including limited resources and unfunded legislation. The way the process is set up makes the laboratories dependent on the

APPENDIX IV

accuracy and thoroughness of the collection agencies. The collection agencies must make sure that the correct individuals are providing samples and that complete and accurate identification and criminal history information accompany the sample to the laboratory. A breakdown in internal controls at the collection agencies can result in a laboratory having unallowable profiles in its convicted offender database, inaccurate information associated with a profile, or a convicted offender database that is not as effective as it would be were all the authorized samples actually collected.

SCHEDULE OF DOLLAR-RELATED FINDINGS

QUESTIONED COSTS:¹²	AMOUNT	PAGE
Grantee not required to adhere to match requirement of the DNA Identification Act of 1994	\$ 459,282	31
Total Questioned Costs	\$ 459,282	

¹² *Questioned Costs* are expenditures that do not comply with legal, regulatory, or contractual requirements, or are not supported by adequate documentation at the time of the audit, or are unnecessary or unreasonable. Questioned costs may be remedied by offset, recovery of funds, or the provision of supporting documentation.



U.S. Department of Justice

Federal Bureau of Investigation

Washington, D. C. 20535-0001

July 13, 2001

Mr. Guy K. Zimmerman
Assistant Inspector General for Audit
Office of Inspector General
Department of Justice
P. O. Box 34190
Washington, D.C. 20043-4190

Dear Mr. Zimmerman:

I am responding on the matter of the Department of Justice (DOJ), Office of the Inspector General (OIG), Draft Report on the Audit of the FBI's Combined DNA Index System, June 18, 2001.

A review of the audit document revealed there were five recommendations; three for the FBI and two pertaining to the National Institute of Justice (NIJ). The responses to the recommendations addressed to the Director of the FBI on Page 30 are as follows:

Recommendation Number 1: Require that the accuracy, completeness, and allowability of the DNA profiles in the national index system be routinely verified through audits or other means.

Response: We agree and the most effective method to meet this recommendation, would be to have the FBI conduct audits of the National DNA Index System (NDIS) participating laboratories. As stated in the audit report, the FBI has previously requested, through the budget process, personnel to conduct these audits. Each time the request for personnel has been denied. A fifth request was made for these positions in the FY 2003 budget. It appears DOJ will approve our request for positions and funds, but no final decision has been made. This decision should be made soon. In the meantime, we will reinforce the requirement for allowable, accurate and complete DNA profiles as follows: (a) A letter (draft copy enclosed) will go to each CODIS laboratory reminding them to regularly review with their staff, the allowable DNA profiles at NDIS; (b) In addition, the allowable profiles are discussed in the two enclosures addressing recommendation number 2; and (c) At the 7th CODIS User's Conference (scheduled for October 29-31, 2001), there will be discussions on the need for regular reviews with CODIS users to ensure DNA profiles are accurate, complete and allowable.

Mr. Guy K. Zimmerman

Recommendation Number 2: Ensure that analysts performing DNA testing at laboratories uploading DNA profiles to the national index system are aware of the NDIS requirements, particularly those requirements delineating the types of allowable profiles.

Response: We have two strategies to address this recommendation, one short term and the second on an annual basis. The allowable profiles are described in the documentation accompanying the Memorandum of Understanding (MOU), under the discussion of NDIS requirements, DOJ-OIG Appendix III, page 47. As stated in the MOU, the NDIS participating laboratories agree to ensure that the profiles contained in the databases are allowable. The FBI now requires documentation from the NDIS participating laboratories on a semi-annual basis on the status of the DNA analysts meeting the semi-annual external proficiency testing requirements, and on an annual basis, documentation on the status of compliance with the annual audits for the FBI's Quality Assurance Standards (QAS).

The FBI will be releasing CODIS software capabilities in mid-August to allow the addition of the two indexes associated with the Missing Persons Program. Although the document focuses on the Missing Persons Program, a short discussion has been added describing existing allowable DNA profiles at NDIS. A draft copy of that document is enclosed.

As stated earlier, NDIS participating laboratories are required to provide annual certification on the status of QAS audits. A new form (draft enclosed) will be provided requiring staff members of each NDIS participating laboratory to be advised annually on the allowable DNA profiles at NDIS. They will be required to sign this form, thereby documenting they have received and are aware of this information. As stated in Recommendation Number 1, this draft certification will be sent to the laboratories.

Recommendation Number 3: Develop and implement a process that will ensure laboratories adequately resolve all deficiencies noted during the QAS-required audits.

Response: To address the recommendation that the FBI Laboratory play a more direct role in ensuring laboratories adequately resolve deficiencies noted during the QAS required audits, the FBI Laboratory has proposed a program to monitor compliance with the FBI Director's QAS. This began with an agreement with the American Society of Crime Laboratory Directors-Laboratory Accreditation Board (ASCLD-LAB) an organization that accredits, inspects and audits laboratories providing forensic examinations. This agreement was reached in 2000, and provides that the ASCLD-LAB would use the FBI's QAS in

Mr. Guy K. Zimmerman

conducting their audits and in return, the FBI would accept such audits in satisfaction of the audits required by the standards.

The FBI has also begun monitoring the actual QAS audit procedure, including a determination if the audit was accurately conducted and then making sure the laboratories comply with the findings. In the last month, ASCLD-LAB has sent to the FBI Laboratory ten QAS audit documents from NDIS participating laboratories. Three additional NDIS participating laboratories have also submitted their QAS audit documents to the FBI.

We anticipate it will take some time to develop this new procedure, for monitoring compliance with the QAS, as this has introduced a new process for the NDIS participating laboratories. The enclosed letter to the Crime Laboratory Directors, introduces this new initiative and invites comments. In addition, we plan on discussing this new process at the 7th CODIS User's Conference, October 29-31, 2001. As with the public dialog and community acceptance that accompanied the development of the two QAS documents, we want to provide an opportunity for the forensic community to discuss this new process.

There are currently more than 100 NDIS participating laboratories, and additional CODIS laboratories are making preparation to become NDIS laboratories, however, there has been an insufficient number of appropriately trained individuals to conduct these QAS audits. To address this need, the FBI Laboratory began a QAS audit training program in September 2000. Thus far 100 people have completed this FBI training. Four additional training classes are scheduled for the remainder of this calendar year. This will provide nearly 200 trained QAS auditors by the end of 2001. Beginning in January 2002, all future FBI QAS audits are to be conducted by individuals that have completed the FBI QAS audit training.

As stated in the draft letter to the Crime Laboratory Directors, we believe these new procedures will assist the FBI in assuring the integrity of DNA data at NDIS.

Regarding the two recommendations to NIJ, the FBI has no comment.

In the event you have any questions, please contact me.

Sincerely yours,



Dwight E. Adams, Ph. D.
Deputy Assistant Director
Laboratory Division

Enclosures



U.S. Department of Justice

Office of Justice Programs

Office of the Assistant Attorney General

Washington, D.C. 20531

JUL 20 2001

MEMORANDUM TO: Guy K. Zimmerman
Assistant Inspector General for Audit
Office of the Inspector General

FROM: Mary Lou Leary *MLL*
Acting Assistant Attorney General

SUBJECT: Office of Justice Programs' Response to the Draft Audit
Report on the Combined DNA Index System

This memorandum is in reference to your correspondence dated June 18, 2001, requesting comments on the Office of the Inspector General's (OIG's) draft audit report on the Combined DNA Index System. The report included five recommendations, two of which were addressed to the Office of Justice Programs (OJP) and three of which were addressed to the Federal Bureau of Investigation (FBI). For ease of review, Recommendation Numbers 4 and 5 pertaining to OJP are stated in bold, followed by responses from the Office of Science and Technology, National Institute of Justice.

The OIG's draft audit report on the Combined DNA Index System has been reviewed by the Office of Science and Technology (OS&T), National Institute of Justice (NIJ). During Fiscal Years 1996-2000, OS&T managed the Forensic DNA Laboratory Improvement Program, a discretionary grant program that provided funds to State and local crime laboratories to improve or implement DNA analysis capabilities. An important focus of this program was to encourage and enable participation by grantee laboratories in the FBI's Combined DNA Index System (CODIS). Primarily, funds were provided to: 1) purchase analytical equipment and supplies needed for typing the genetic markers included in the CODIS databank; 2) train laboratory analysts to use this instrumentation; and 3) outsource to private DNA testing laboratories the analysis of convicted offender DNA samples for inclusion in the CODIS databank. Some funds were also provided for facilities modifications needed to accommodate the new instrumentation and for education expenses (course tuition) to ensure laboratory staff compliance with FBI-established standards.

OIG Comment: This issue was presented in the draft report. However, based on subsequent research, we no longer consider the NIPCL grants a deficiency.

Recommendation 4

We recommend that the Assistant Attorney General, Office of Justice Programs, require the Director of the NIJ to remedy the \$437,887 in questioned costs that arose because grants were made to a private laboratory.

We disagree with this recommendation. The OIG has questioned \$437,887 in grant funds awarded to the Northern Illinois Police Crime Laboratory (NIPCL). The OIG states that it does not believe NIJ has authority to fund a laboratory receiving additional revenue beyond government support and recommends the questioned funds be remedied. NIJ disagrees with the OIG's underlying analysis of the requirements of the DNA Identification Act of 1994. Based upon consultation with OJP's Office of General Counsel (OGC), NIJ offers the following explanation with which OGC concurs:

At 42 U.S.C. §3796kk, the Attorney General is granted authority to make funds available to "States and units of local government, or combinations thereof, to carry out . . . a program or project intended to develop or improve the capability to analyze deoxyribonucleic acid . . . in a forensic laboratory" [emphasis added]. The Attorney General has delegated this authority to the Director of NIJ. The law provides no guidance as to the meaning of the phrase "and combinations thereof." There is no indication that this was intended to apply solely to single governmental units.

The NIPCL was created by, is financed by, and is governed by the police agencies it serves. Several local agencies in Northern Illinois created the NIPCL as a non-profit regional laboratory offering forensic services to local law enforcement agencies in order to receive more timely DNA services for their cases than were available to them through the Chicago laboratory. Assessments from those agencies are the primary funding source for NIPCL. The police chiefs of each agency serve on a board that directs the operations of NIPCL. NIJ believes that this arrangement clearly represents a combination of local government efforts and is eligible for funding under this grant program. In addition, the NIPCL clearly performed valuable DNA analysis services for the units of local government that provided funding.

Thus, NIJ disagrees with the OIG's conclusion that: (1) NIPCL was ineligible for support under the DNA Identification Act; and (2) \$437,887 in grant funds should be remedied. Therefore, we consider this recommendation to be closed.

Recommendation 5

We recommend that the Assistant Attorney General, Office of Justice Programs, require the Director of the NIJ to remedy the \$459,282 in questioned costs that occurred because the NIJ did not require the University of Central Florida to contribute matching funds for the project funded by its LIP grants.

We agree with this recommendation. The OIG has questioned the fact that the University of Central Florida (UCF) failed to document State matching funds in two of its awards earmarked in the FY 1997 and FY 1999 appropriations under the DNA Identification Act. These awards totaled \$1,377,846 and the required minimum State match would have been a total of \$459,282. NIJ was aware that UCF had State support and matching funds available for its project, but did not require the grantee to declare a match in its applications for federal funds. This was due to a perhaps erroneous assumption that, as an earmark directed at Arson and Bombing evidence, the University was not only exempt from the requirement of the Act that funds be used "to carry out . . . a program or project intended to develop or improve the capability to analyze deoxyribonucleic acid . . . in a forensic laboratory," but would also not be held to the other requirements unique to the Act, including the 25% State match requirement. Nevertheless, a review of the state support (see enclosure) shows for both FY 1997 and FY 1999, the state provided \$1,347,157 to support the earmarked project. This represents nearly three times the amount needed for a State match for laboratories seeking DNA Improvement funding and directly contributed to the success of this NIJ-funded effort. Therefore, we consider this recommendation to be closed.

If you have any questions or need additional information about this response, please contact me on (202) 307-5933 or LeToya Bryant, OJP Audit Liaison, on (202) 514-0692. Thank you for your continued cooperation and assistance.

Enclosure

cc: Julie E. Samuels
Acting Director
National Institute of Justice
Office of Justice Programs

**AUDIT DIVISION ANALYSIS AND
SUMMARY OF ACTIONS NECESSARY TO CLOSE REPORT**

We reviewed the FBI's and OJP's responses to our draft report and made revisions to the final audit report where we considered it appropriate. The status of individual recommendations is as follows.

Recommendation No.

1. **Resolved.** The FBI stated in documentation provided as part of its response that it is working to develop a plan to routinely verify the accuracy, completeness, and allowability of the DNA profiles uploaded to the national index system. This recommendation can be closed when we receive documentation that demonstrates the plan has been fully developed and implemented.
2. **Resolved.** The FBI provided a copy of a draft policy that requires forensic laboratories participating in the national index system to advise DNA analysts of the requirements concerning allowable DNA profiles on an annual basis. This recommendation can be closed when we receive documentation confirming that a final version of this policy has been developed and implemented.
3. **Resolved.** The FBI stated in documentation provided as part of its response that it has initiated a pilot program to monitor laboratory audits. The FBI reviews audit documents to verify that the appropriate standards were used and, when applicable, that the laboratory has taken appropriate corrective actions for audit findings. This recommendation can be closed when we receive documentation describing the FBI's audit review process and confirming that the program has been put into operation on a permanent basis.
4. In our draft audit report, we questioned grant funds awarded to the Northern Illinois Police Crime Laboratory based upon the Director's statement that the laboratory was a private entity, not a police agency, and that it sometimes performed work for private sector entities for fees. We also included a recommendation number 4 that related to this question. However, in further communications with OJP (see page 60), and after consultation with the OIG General Counsel, we have decided not to question the grant funds and have removed the recommendation number 4 that was in our draft report.
5. **Closed.** The NIJ provided documentation demonstrating that the University of Central Florida contributed adequate matching funds for the project funded by its LIP grants.